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Combined Civil Services (Preliminary) Examination – I (Group I Services)

[Single Paper consisting of General Studies (Degree Standard – 175 questions), and Aptitude and Mental Ability (SSLC Standard – 25 questions)]

Code:497

Part A: General Studies (Degree Standard – 175 Questions)

Unit I: General Science (10 Questions)

Scientific knowledge and scientific temper - Power of reasoning - Rote learning vs conceptual learning - Science as a tool to understand the past, present, and future; Nature of universe - General scientific laws – Mechanics - Properties of matter, force, motion, and energy - Everyday application of the basic principles of mechanics, electricity and magnetism, light, sound, heat, nuclear physics, laser, electronics, and communications; Elements and compounds, acids, bases, salts, petroleum products, fertilizers, pesticides; Main concepts of life science, classification of living organisms, evolution, genetics, physiology, nutrition, health and hygiene, human diseases; Environment and ecology; Latest inventions in science and technology; Current affairs.

Unit II: Geography of India (10 Questions)

Location - Physical features - Monsoon, rainfall, weather and climate - Water resources - Rivers in India - Soil, Minerals and Natural Resources - Forest and Wildlife - Agricultural pattern; Transport – Communication; Social Geography – Population density and distribution - Racial, linguistic groups and major tribes; Natural calamity - Disaster management – Environmental pollution - Reasons and preventive measures - Climate change - Green energy; Geographical landmarks; Current affairs.

Unit III: History, Culture of India, and Indian National Movement (25 Questions)

Indus Valley Civilization - Guptas, Delhi Sultans, Mughals, and Marathas - Age of Vijayanagaram and Bahmani Kingdoms - South Indian History; Change and continuity in the socio-cultural history of India; National Renaissance - Early uprising against British rule - Indian National Congress - Emergence of leaders – B.R.Ambedkar, Bhagat Singh, Bharathiar, V.O.Chidambaranar, Jawaharlal Nehru, Kamarajar, Mahatma Gandhi, Maulana Abul Kalam Azad, Thanthai Periyar, Rajaji, Subash Chandra Bose, Rabindranath Tagore, and others; Different modes of agitation: Growth of Satyagraha and Militant Movements; Communalism and Partition; Characteristics of Indian Culture, Unity in Diversity – Race, Language, Custom; India as a Secular State, Social Harmony; Prominent personalities in various spheres – Arts, Science, Literature and Philosophy; National symbols – Eminent personalities and places in news – Sports – Books and Authors; Current affairs.

Unit IV: Indian Polity (40 Questions)

Constitution of India - Preamble to the Constitution - Salient features of the Constitution - Union, State and Union Territory - Citizenship, Fundamental Rights, Fundamental Duties, Directive Principles of State Policy - Union Executive, Union Legislature - State Executive, State Legislature - Local Governments, Panchayat Raj - Spirit of federalism: Centre - State relationships - Election - Judiciary in India – Rule of Law - Corruption in public life – Anti-corruption measures - Lokpal and Lok Ayukta - Right to Information - Empowerment of Women - Consumer Protection Forums, Human Rights Charter; Political parties and political system in India; Current affairs.

Unit V: Indian Economy and Development Administration in Tamil Nadu (50 Questions)

Nature of Indian Economy – Five-year plan models - an assessment - Planning Commission and Niti Aayog; Sources of revenue - Reserve Bank of India - Fiscal Policy and Monetary Policy - Finance Commission - Resource sharing between Union and State Governments - Goods and Services Tax; Structure of Indian economy and employment generation, Land Reforms and Agriculture - Application of Science and Technology in Agriculture - Industrial growth - Rural welfare oriented programmes - Social problems - Population, Education, Health, Employment, Poverty; Human Development Indicators in Tamil Nadu and a comparative assessment across the

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Country – Impact of social reform movements in the socio-economic development of Tamil Nadu - Political parties and welfare schemes for various sections of people - Rationale behind the reservation policy, and access to the social resources - Economic trends in Tamil Nadu - Role and impact of social welfare schemes in the socio-economic development of Tamil Nadu - Social justice and social harmony as the cornerstones of socio-economic development; Education and health systems in Tamil Nadu; Geography of Tamil Nadu and its impact on economic growth; Achievements of Tamil Nadu in various fields; e-Governance in Tamil Nadu; Public awareness and General administration - Welfare oriented Government schemes and their utility, Problems in public delivery systems; Current socio-economic issues; Current affairs.

Unit VI: History, Culture, Heritage, and Socio-Political Movements in Tamil Nadu (40 Questions)

History of Tamil Society, related archaeological discoveries, Tamil literature from Sangam age till contemporary times; Thirukkural - Significance as a secular literature - Relevance to everyday life, Impact of Thirukkural on humanity, Thirukkural and universal values - Relevance to Socio-politico-economic affairs, Philosophical content in Thirukkural; Role of Tamil Nadu in freedom struggle - Early agitations against British Rule - Role of women in freedom struggle; Evolution of 19th and 20th century socio-political movements in Tamil Nadu - Justice Party, Growth of Rationalism - Self Respect Movement, Dravidian Movement, and principles underlying both these movements; Contributions of Thanthai Periyar and Perarignar Anna.

Part B: Aptitude and Mental Ability (SSLC Standard - 25 Questions)

Unit I: Aptitude (15 Questions)

Simplification - Percentage - Highest Common Factor (HCF) - Lowest Common Multiple (LCM) - Ratio and Proportion - Simple interest - Compound interest - Area - Volume - Time and Work.

Unit II: Reasoning (10 Questions)

Logical reasoning - Puzzles - Dice - Visual reasoning - Alpha numeric reasoning - Number series.

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Date: 16.12.2024

ஒருங்கிணைந்த குடிமைப் பணிகள் (முதல்நிலை) தேர்வு-I (தொகுதி I பணிகள்)

[பொது அறிவு (பட்டப்படிப்புத் தரம் - 175 கேள்விகள்) மற்றும் திறனறிவும் மனக்கணக்கு நுண்ணறிவும் (பத்தாம் வகுப்புத் தரம் - 25 கேள்விகள்) அடங்கிய ஒரு தாள்]

குறியீடு: 497

பகுதி அ: பொது அறிவு (பட்டப்படிப்புத் தரம்) (175 கேள்விகள்)

அலகு I: பொது அறிவியல் (10 கேள்விகள்)
அறிவியல் அறிவு மற்றும் அறிவியல் உணர்வு - பகுத்தறிதல் - பொருள் உணராமல் கற்றலும் கருத்துணர்ந்து கற்றலும் - கடந்தகாலம், நிகழ்காலம், எதிர்காலம் பற்றி புரிந்து கொள்வதற்கான ஒரு கருவி அறிவியல்; பேரண்டத்தின் இயல்பு - பொது அறிவியல் விதிகள் - இயக்கவியல் - பருப்பொருளின் பண்புகள், விசை, இயக்கம் மற்றும் ஆற்றல் - அன்றாட வாழ்வில் இயக்கவியல், மின்னியல், காந்தவியல், ஒளி, ஒலி, வெப்பம், அணுக்கரு இயற்பியல், லேசர் (LASER), மின்னணுவியல் மற்றும் தகவல் தொடர்பியல் ஆகியவற்றின் அடிப்படை கோட்பாடுகளின் பயன்பாடுகள்; தனிமங்களும் சேர்மங்களும், அமிலங்கள், காரங்கள், உப்புகள், பெட்ரோலிய பொருட்கள், உரங்கள், பூச்சிகொல்லிகள்; உயிரியலின் முக்கிய கோட்பாடுகள், உயிர் உலகின் வகைப்பாடு, பரிணாமம், மரபியல், உடலியங்கியல், உணவியல், உடல்நலம் மற்றும் சுகாதாரம், மனிதநோய்கள்; சுற்றுப்புறச்சூழல் மற்றும் சூழலியல்; அறிவியல் மற்றும் தொழில்நுட்பத்தில் அண்மைக்கால கண்டுபிடிப்புகள்; நடப்பு நிகழ்வுகள்.

அலகு II: இந்தியாவின் புவியியல் (10 கேள்விகள்)
அமைவிடம் - இயற்கை அமைவுகள் - பருவமழை, மழைப்பொழிவு, வானிலை மற்றும் காலநிலை - நீர் வளங்கள் - இந்திய ஆறுகள் - மண், கனிம வளங்கள் மற்றும் இயற்கை வளங்கள் - காடு மற்றும் வன உயிரினங்கள் - வேளாண் முறைகள்; போக்குவரத்து - தகவல் தொடர்பு; சமூகப் புவியியல் - மக்கள்தொகை அடர்த்தி மற்றும் பரவல் - இனம், மொழிக் குழுக்கள் மற்றும் முக்கியப் பழங்குடிகள்; இயற்கைப் பேரிடர் - பேரிடர் மேலாண்மை; சுற்றுச்சூழல் மாசுபடுதல் - காரணங்களும் தடுப்பு முறைகளும் - பருவநிலை மாற்றம் - பசுமை ஆற்றல்; புவியியல் அடையாளங்கள்; நடப்பு நிகழ்வுகள்.

அலகு III: இந்தியாவின் வரலாறு, பண்பாடு மற்றும் இந்திய தேசிய இயக்கம் (25 கேள்விகள்)
சிந்து சமவெளி நாகரிகம் - குப்தர்கள், தில்லி சுல்தான்கள், முகலாயர்கள் மற்றும் மராத்தியர்கள் - விஜயநகர மற்றும் பாமினி அரசுகளின் காலம் - தென் இந்திய வரலாறு; இந்திய சமூகப் பண்பாட்டு வரலாற்றில் மாற்றங்களும் தொடர்ச்சியும்; தேசிய மறுமலர்ச்சி - ஆங்கிலேயர் ஆட்சிக்கு எதிரான தொடக்க கால எழுச்சிகள் - இந்திய தேசிய காங்கிரஸ் - தலைவர்கள் உருவாதல் - பி.ஆர்.அம்பேத்கர், பகத்சிங், பாரதியார், வ.உ.சிதம்பரனார், ஜவகர்லால் நேரு, காமராசர், மகாத்மா காந்தி, மௌலானா அபுல் கலாம் ஆசாத், தந்தை பெரியார், இராஜாஜி, சுபாஷ் சந்திர போஸ், ரவீந்திரநாத் தாகூர் மற்றும் பலர்; விடுதலைப் போராட்டத்தின் பல்வேறு நிலைகள்: அகிம்சை முறையின் வளர்ச்சி மற்றும் புரட்சிகர இயக்கங்கள்; வகுப்புவாதம் மற்றும் தேசப்பிரிவினை; இந்தியப் பண்பாட்டின் இயல்புகள், வேற்றுமையில் ஒற்றுமை - இனம், மொழி, வழக்காறு; இந்தியா ஒரு மதச்சார்பற்ற நாடு, சமூக நல்லிணக்கம்; கலை, அறிவியல், இலக்கியம் மற்றும் தத்துவம் ஆகிய வெவ்வேறு துறைகளில் தனித்துவம் கொண்ட ஆளுமைகள்; தேசிய சின்னங்கள் - செய்திகளில் இடம்பெற்ற சிறந்த ஆளுமைகளும் இடங்களும் - விளையாட்டு - நூல்களும் ஆசிரியர்களும்; நடப்பு நிகழ்வுகள்.

அலகு IV: இந்திய ஆட்சியியல் (40 கேள்விகள்)
இந்திய அரசியலமைப்பு - அரசியலமைப்பின் முகவுரை - அரசியலமைப்பின் முக்கிய கூறுகள் - ஒன்றியம், மாநிலம் மற்றும் யூனியன் பிரதேசங்கள்; குடியுரிமை, அடிப்படை உரிமைகள், அடிப்படைக் கடமைகள், அரசின் நெறிமுறைக் கோட்பாடுகள்; ஒன்றிய நிர்வாகம், ஒன்றிய நாடாளுமன்றம் - மாநில நிர்வாகம், மாநில சட்டமன்றம் - உள்ளாட்சி அமைப்புகள், பஞ்சாயத்து ராஜ்; கூட்டாட்சியின் அடிப்படைத் தன்மைகள்; மத்திய - மாநில உறவுகள்; தேர்தல் - இந்திய நீதி அமைப்புகள் - சட்டத்தின் ஆட்சி; பொதுவாழ்வில் ஊழல் - ஊழல் தடுப்பு நடவடிக்கைகள்- லோக்பால் மற்றும் லோக் ஆயுக்தா - தகவல் உரிமை - பெண்களுக்கு அதிகாரமளித்தல் - நுகர்வோர் பாதுகாப்பு அமைப்புகள் - மனித உரிமைகள் சாசனம்; இந்தியாவில் அரசியல் கட்சிகளும் மற்றும் ஆட்சியல் முறைகளும்; நடப்பு நிகழ்வுகள்.

அலகு V: இந்தியப் பொருளாதாரம் மற்றும் தமிழ்நாட்டில் வளர்ச்சி நிர்வாகம் (50 கேள்விகள்)
இந்தியப் பொருளாதாரத்தின் இயல்புகள் - ஐந்தாண்டு திட்ட மாதிரிகள் - ஒரு மதிப்பீடு - திட்டக்குழு மற்றும் நிதி ஆயோக்; வருவாய் ஆதாரங்கள் - இந்திய ரிசர்வ் வங்கி - நிதி கொள்கை மற்றும் பணவியல் கொள்கை - நிதி ஆணையம் - மத்திய மாநில அரசுகளுக்கிடையேயான நிதிப் பகிர்வு -

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சரக்கு மற்றும் சேவை வரி; இந்திய பொருளாதார அமைப்பு மற்றும் வேலைவாய்ப்பு உருவாக்கம், நிலச் சீர்திருத்தங்கள் மற்றும் வேளாண்மை - வேளாண்மையில் அறிவியல் தொழில்நுட்பத்தின் பயன்பாடு - தொழில் வளர்ச்சி - ஊரக நலன்சார் திட்டங்கள் - சமூகப் பிரச்சனைகள் - மக்கள் தொகை, கல்வி, நலவாழ்வு, வேலைவாய்ப்பு, வறுமை; தமிழ்நாட்டின் மனிதவள மேம்பாட்டுக் குறியீடுகளும் அவற்றை தேசிய மற்றும் பிற மாநிலங்களுக்கான குறியீடுகளுடன் ஒப்பாய்வும் - தமிழ்நாட்டின் சமூக பொருளாதார வளர்ச்சிக்கு சமூக மறுமலர்ச்சி இயக்கங்களின் பங்களிப்பு; அரசியல் கட்சிகளும் பலதரப்பு மக்களுக்கான நலத்திட்டங்களும் - இடஒதுக்கீட்டுக் கொள்கைக்கான நியாயங்களும் சமூக வளங்களைப் பெறும் வாய்ப்புகளும் - தமிழ்நாட்டின் பொருளாதார போக்குகள் - தமிழ்நாட்டின் சமூக பொருளாதார வளர்ச்சியில் சமூகநலத் திட்டங்களின் தாக்கமும் பங்களிப்பும்; சமூக நீதியும் சமூக நல்லிணக்கமும் சமூகப் பொருளாதார மேம்பாட்டின் மூலாதாரங்கள்; தமிழ்நாட்டின் கல்வி மற்றும் நலவாழ்வு (Health) முறைமைகள்; தமிழ்நாட்டின் புவியியல் கூறுகளும் பொருளாதார வளர்ச்சியில் அவற்றின் தாக்கமும்; பல்வேறு துறைகளில் தமிழ்நாடு நிகழ்த்தியுள்ள சாதனைகள்; தமிழ்நாட்டில் மின்னாளுகை; பொது விழிப்புணர்வும் (Public Awareness) பொது நிர்வாகமும் - நலன்சார் அரசுத் திட்டங்களும் அவற்றின் பயன்பாடும், பொது விநியோக அமைப்புகளில் (Public delivery systems) நிலவும் சிக்கல்கள்; தற்போதைய சமூகப் பொருளாதார பிரச்சனைகள்; நடப்பு நிகழ்வுகள்.

அலகு VI: தமிழ்நாட்டின் வரலாறு, பண்பாடு, மரபு மற்றும் சமூக - அரசியல் இயக்கங்கள் (40 கேள்விகள்)

தமிழ் சமுதாய வரலாறு, அது தொடர்பான தொல்லியல் கண்டுபிடிப்புகள், சங்க காலம் முதல் இக்காலம் வரையிலான தமிழ் இலக்கிய வரலாறு; திருக்குறள் - மதச் சார்பற்ற தனித்தன்மையுள்ள இலக்கியம் - அன்றாட வாழ்வியலோடு தொடர்புத் தன்மை - மானுடத்தின் மீதான திருக்குறளின் தாக்கம் - திருக்குறளும் மாறாத விழுமியங்களும் - சமூக அரசியல் பொருளாதார நிகழ்வுகளில் திருக்குறளின் பொருத்தப்பாடு - திருக்குறளில் தத்துவக் கோட்பாடுகள்; விடுதலைப் போராட்டத்தில் தமிழ்நாட்டின் பங்கு - ஆங்கிலேயருக்கு எதிரான தொடக்க கால கிளர்ச்சிகள் - விடுதலைப் போராட்டத்தில் பெண்களின் பங்கு; பத்தொன்பது மற்றும் இருபதாம் நூற்றாண்டுகளில் தமிழ்நாட்டின் சமூக - அரசியல் இயக்கங்களின் பரிணாம வளர்ச்சி - நீதிக்கட்சி, பகுத்தறிவு வாதத்தின் வளர்ச்சி - சுயமரியாதை இயக்கம், திராவிட இயக்கம் மற்றும் இவ்வியக்கங்களுக்கான அடிப்படை கொள்கைகள், தந்தை பெரியார் மற்றும் பேரறிஞர் அண்ணாவின் பங்களிப்புகள்.

பகுதி ஆ: திறனறிவும் மனக்கணக்கு நுண்ணறிவும்
(பத்தாம் வகுப்புத் தரம் - 25 கேள்விகள்)

அலகு I: திறனறிவு (15 கேள்விகள்)

சுருக்குதல் - விழுக்காடு - மீப்பெரு பொதுக் காரணி (HCF) - மீச்சிறு பொது மடங்கு (LCM); விகிதம் மற்றும் விகிதாச்சாரம்; தனிவட்டி - கூட்டு வட்டி - பரப்பு - கொள்ளளவு - காலம் மற்றும் வேலை.

அலகு II: காரணவியல் (10 கேள்விகள்)

தருக்கக் காரணவியல் - புதிர்கள் - பகடை - காட்சிக் காரணவியல் - எண் எழுத்துக் காரணவியல் - எண் வரிசை.

Date: 16.12.2024

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CHAPTER 01

Location, Extent and Physical Features

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1. What is the latitudinal and longitudinal extent of mainland India?
(A) 8°4'N to 37°6'N and 68°7'E to 97°25'E
(B) 6°4'N to 35°6'N and 68°7'E to 95°25'E
(C) 8°4'N to 37°6'N and 65°7'E to 97°25'E
(D) 6°45'N to 37°6'N and 68°7'E to 97°25'E
(E) Answer not known

2. Read the following assertion and reason and select the correct answer from the options given below:
Assertion (A): The standard meridian of India passes through Mirzapur in Uttar Pradesh.
Reason (R): Selecting a standard meridian centrally located prevents time confusion across the country's vast longitudinal extent.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

3. Match the neighboring countries of India with the length of their shared land boundary (in km):
List I: (Neighboring Countries)
P. Bangladesh
Q. China
R. Pakistan
S. Nepal
List II: (Length in km)
I. 3488
II. 3323
III. 4096.7
IV. 1751
(A) P-III, Q-I, R-II, S-IV
(B) P-III, Q-II, R-I, S-IV
(C) P-I, Q-III, R-IV, S-II
(D) P-II, Q-I, R-IV, S-III
(E) Answer not known

4. Which of the following pairs regarding India's coastline is incorrectly matched?
(A) Third longest coastline - Maharashtra
(B) Longest coastline - Gujarat
(C) Second longest coastline - Tamil Nadu
(D) Total length of mainland coastline - 6100 km
(E) Answer not known

5. Consider the following statements about India's geographical position:
I. India is entirely located in the Northern and Eastern Hemispheres.
II. India's central position at the head of the Indian Ocean facilitates maritime trade.
III. India is the largest country in Asia by geographical area.
Which of the above statement(s) is/are correct?
(A) I and II
(B) II and III
(C) I only
(D) III only
(E) Answer not known

6. Identify the correct statement regarding India's maritime zones.
(A) Territorial waters extend up to 12 nautical miles from the baseline.
(B) The Contiguous Zone extends up to 200 nautical miles from the baseline.
(C) The Exclusive Economic Zone ends precisely at 12 nautical miles.
(D) India has no jurisdiction over the resources in its Exclusive Economic Zone.
(E) Answer not known

7. Which of the following represents the correct sequence of India's neighboring countries in decreasing order of the land boundary length shared with India?
(A) China, Bangladesh, Pakistan, Nepal
(B) Bangladesh, China, Pakistan, Nepal
(C) Bangladesh, Pakistan, China, Myanmar

(D) China, Pakistan, Bangladesh, Myanmar
(E) Answer not known

8. Based on the longitudinal extent of India, if it is 6:00 AM in Gujarat, what would be the approximate local time in Arunachal Pradesh?
(A) 4:00 AM
(B) 5:00 AM
(C) 7:00 AM
(D) 8:00 AM
(E) Answer not known

9. Consider the following statements regarding the physical boundaries of India:
I. India shares its longest land boundary with Bangladesh.
II. India shares its shortest land boundary with Afghanistan.
III. Sri Lanka is separated from India by the Gulf of Khambhat.
IV. The total length of the coastline including islands is 7516.6 km.
Which of the above statement(s) is/are correct?
(A) I, II and IV
(B) II, III and IV
(C) I and III
(D) II and IV
(E) Answer not known

10. Identify the incorrect statement concerning India's political divisions.
(A) India currently comprises 28 States and 8 Union Territories.
(B) The state of Jammu and Kashmir was reorganized into two Union Territories in 2019.
(C) Dadra and Nagar Haveli and Daman and Diu were merged into a single Union Territory.
(D) Telangana is a coastal state bordered by the Bay of Bengal.
(E) Answer not known

11. Arrange the following states in the correct sequence from North to South along the western coast of India:
I. Maharashtra
II. Gujarat
III. Kerala
IV. Karnataka
(A) II, I, IV, III
(B) II, IV, I, III
(C) I, II, III, IV
(D) I, II, IV, III
(E) Answer not known

12. By definition, what is a Contiguous Zone in the context of maritime boundaries?
(A) A zone stretching 200 nautical miles where a nation maintains exclusive sovereign fishing and exploration rights.
(B) Maritime zone extending 24 nautical miles from the baseline for customs, fiscal, and immigration control.
(C) The primary body of water situated between the mainland and the distant island territories of the nation.
(D) The area where international trade ships and merchant vessels can dock without seeking sovereign permission.
(E) Answer not known

13. Read the following assertion and reason and select the correct answer from the options given below:
Assertion (A): India's geopolitical significance is highly elevated by its peninsular shape.
Reason (R): It provides India with a long coastline, giving it easy access to the trade routes connecting Europe and East Asia.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

14. Match the Indian States with the international borders they share:
List I: (Indian States)
P. West Bengal
Q. Uttarakhand
R. Sikkim
S. Arunachal Pradesh
List II: (International Borders)
I. Nepal, Bhutan, China
II. Bhutan, China, Myanmar
III. Bangladesh, Nepal, Bhutan
IV. Nepal, China
(A) P-III, Q-IV, R-I, S-II
(B) P-IV, Q-III, R-I, S-II
(C) P-III, Q-I, R-IV, S-II

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(D) P-I, Q-IV, R-III, S-II
(E) Answer not known

15. Which of the following pairs regarding maritime borders is correctly matched?
(A) Palk Strait - Separates India and Maldives
(B) Nine Degree Channel - Separates Andaman and Nicobar Islands
(C) Eight Degree Channel - Separates Lakshadweep and Maldives
(D) Ten Degree Channel - Separates Minicoy and mainland India
(E) Answer not known

16. Consider the following statements about the major physiographic divisions of India:
I. The Northern Mountains act as a climate divide.
II. The Peninsular Plateau is formed of geologically recent alluvial deposits.
III. The Northern Plains are densely populated due to fertile soil.
IV. The Coastal Plains are broader on the west than on the east.
V. The Indian Desert lies to the west of the Aravalli hills.
Which of the above statement(s) is/are incorrect?
(A) I, II, III and IV
(B) II, III, IV and V
(C) II and IV
(D) I, III and V
(E) Answer not known

17. Identify the key feature that distinguishes the Trans-Himalayan region from the Greater Himalayas.
(A) It is located strictly to the southern periphery of the Greater Himalayan ranges.
(B) It hosts the most prominent high peaks of the globe, specifically including Mount Everest.
(C) It predominantly consists of marine fossiliferous sedimentary rocks of the Tethys sea.
(D) It is densely covered by a continuous canopy of tropical evergreen and deciduous forests.
(E) Answer not known

18. When comparing the Western Ghats and the Eastern Ghats, which of the following statements is true?
(A) The Eastern Ghats are continuous while the Western Ghats are highly fragmented.
(B) The Western Ghats have a higher average elevation than the Eastern Ghats.
(C) Major peninsular rivers originate in the Eastern Ghats.
(D) The highest peak of the Eastern Ghats is Anaimudi.
(E) Answer not known

19. What is the precise definition of the 'Bhabar' region in the Northern Plains?
(A) A low-lying zone of fresh alluvium deposited by seasonal floodwaters on an annual basis.
(B) A marshy and damp tract of land situated immediately south of the Shiwalik mountain range.
(C) An elevated terrace composed of older alluvium that contains distinct calcareous kankar deposits.
(D) A narrow belt of highly porous pebbles and gravel lying parallel to the Shiwalik foothills.
(E) Answer not known

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20. What is the total length of India's land boundary?
(A) 12,500 km
(B) 15,200 km
(C) 17,500 km
(D) 19,200 km
(E) Answer not known

21. Which Himalayan range is also known as the Himadri?
(A) Trans-Himalayas
(B) Lesser Himalayas
(C) Greater Himalayas
(D) Shiwaliks
(E) Answer not known

22. Read the following assertion and reason and select the correct answer from the options given below:
Assertion (A): The Shiwalik range is highly prone to landslides and soil erosion.
Reason (R): It is composed of unconsolidated river deposits and experiences heavy rainfall.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.

(D) A is false but R is true.
(E) Answer not known

23. Match the Trans-Himalayan ranges with their prominent features or locations:
List I: (Trans-Himalayan Ranges)
P. Karakoram
Q. Zaskar
R. Ladakh
S. Kailash
List II: (Features/Locations)
I. Extends into Tibet
II. Highest peak is K2 (Godwin Austen)
III. Located south of Ladakh range
IV. Lies between Karakoram and Zaskar ranges
(A) P-II, Q-III, R-IV, S-I
(B) P-I, Q-IV, R-II, S-III
(C) P-II, Q-IV, R-I, S-III
(D) P-III, Q-II, R-IV, S-I
(E) Answer not known

24. Which of the following pairs of Himalayan peaks and their locations is incorrectly matched?
(A) Mount Everest - Nepal
(B) K2 (Godwin Austen) - Himachal Pradesh
(C) Nanda Devi - Uttarakhand
(D) Kangchenjunga - Sikkim
(E) Answer not known

25. Consider the following statements about the Lesser Himalayas (Himachal):
I. They consist of highly compressed and altered rocks.
II. Famous hill stations like Shimla, Mussoorie, and Nainital are located in this range.
III. The average height of this range exceeds 6000 meters.
Which of the above statement(s) is/are correct?
(A) I and II
(B) II and III
(C) I only
(D) III only
(E) Answer not known

26. Identify the correct statement regarding the Eastern and Western Himalayas.
(A) The Western Himalayas receive significantly greater annual precipitation than the Eastern Himalayas.
(B) The Eastern Himalayas are largely devoid of dense tropical forests and endemic biodiversity.
(C) The Western Himalayas rise abruptly from the northern plains with a remarkably steep gradient.
(D) The snowline is at a lower altitude in the Eastern Himalayas compared to the Western Himalayas.
(E) Answer not known

27. Which of the following represents the correct sequence of mountain ranges from North to South in the Trans-Himalayan region?
(A) Karakoram, Ladakh, Zaskar, Pir Panjal
(B) Zaskar, Ladakh, Karakoram, Pir Panjal
(C) Karakoram, Zaskar, Ladakh, Pir Panjal
(D) Pir Panjal, Zaskar, Ladakh, Karakoram
(E) Answer not known

28. How does the presence of the Himalayan mountain system practically benefit northern India agriculturally?
(A) It provides massive elevated plateaus designed for large-scale mechanized farming operations.
(B) It prevents moisture-laden southwest monsoon winds from escaping, causing significant rainfall.
(C) It ensures that the entire northern plains are composed strictly of leached laterite soils.
(D) It blocks all cyclonic storms that emerge from the Arabian Sea during the summer months.
(E) Answer not known

29. Consider the following statements regarding the Himalayan passes:
I. Nathu La connects Sikkim with Tibet.
II. Rohtang Pass is located in Himachal Pradesh.
III. Banihal Pass provides access to the Kashmir Valley.
IV. Shipki La connects Uttarakhand with Nepal.
Which of the above statement(s) is/are correct?
(A) I, II and III
(B) II, III and IV
(C) I and IV
(D) II and IV
(E) Answer not known

30. Identify the incorrect statement about the Northern Plains of India.

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(A) The soil found predominantly in these plains is black cotton soil.
(B) They are formed by the interplay of the Indus, the Ganga, and the Brahmaputra river systems.
(C) They cover an area of approximately 7 lakh square kilometers.
(D) The plains are densely populated due to a favorable climate and agricultural productivity.
(E) Answer not known

31. Arrange the following sub-divisions of the Northern Plains in the correct sequence from North to South:
I. Khadar
II. Bhabar
III. Terai
IV. Bhangar
(A) II, III, IV, I
(B) I, IV, III, II
(C) III, II, I, IV
(D) II, IV, III, I
(E) Answer not known

32. What defines the 'Terai' region in the geographical context of India?
(A) A dry and arid stretch of shifting sand dunes located in the western regions of Rajasthan.
(B) Elevated terraces of older alluvium containing calcareous concretions above the flood level.
(C) A highly fertile and broad deltaic region situated at the terminal mouth of the Ganga river.
(D) A marshy, damp, and thickly forested tract south of the Bhabar belt where streams re-emerge.
(E) Answer not known

33. Read the following assertion and reason and select the correct answer from the options given below:
Assertion (A): The Khadar soils of the Northern Plains are highly fertile and suitable for intensive agriculture.
Reason (R): They are replenished almost every year by the deposition of fresh alluvium during floods.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

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34. Match the Himalayan passes with the respective states they are located in:
List I: (Himalayan Passes)
P. Jelep La
Q. Bomdi La
R. Niti Pass
S. Zoji La
List II: (States/UT)
I. Arunachal Pradesh
II. Uttarakhand
III. Sikkim
IV. Ladakh
(A) P-III, Q-I, R-II, S-IV
(B) P-III, Q-II, R-I, S-IV
(C) P-I, Q-III, R-IV, S-II
(D) P-IV, Q-I, R-II, S-III
(E) Answer not known

35. Which of the following pairs regarding the sub-divisions of the Peninsular Plateau is correctly matched?
(A) Central Highlands - Lies to the south of the Narmada River
(B) Deccan Plateau - Lies to the north of the Narmada River
(C) Chota Nagpur Plateau - Completely devoid of mineral resources
(D) Malwa Plateau - Bound by the Aravalli range in the west
(E) Answer not known

36. Consider the following statements about the Thar Desert:
I. It lies to the western margins of the Aravalli Hills.
II. It consists of an undulating sandy plain covered with sand dunes.
III. It receives rainfall above 1500 mm annually.
IV. Luni is the only large river in this region.
V. Barchans (crescent-shaped dunes) are a common feature.
Which of the above statement(s) is/are correct?
(A) I, II, III and IV
(B) I, II, IV and V
(C) II, III and V

(D) I, III and IV
(E) Answer not known

37. Identify the key feature of the Indo-Gangetic plain's 'Bhangar' region.
(A) It is composed of fine silt and clay deposited annually in the current active river channels.
(B) It is a heavily forested and marshy zone located at the immediate foothills of the Himalayas.
(C) It consists of older alluvium lying above the flood levels of rivers, containing 'Kankar'.
(D) It is an extensive estuarine plain primarily found along the eastern coastal margins of India.
(E) Answer not known

38. Comparing the Deccan Plateau with the Central Highlands, which of the following is true?
(A) The Deccan Plateau is characterized by its volcanic origin and black soil.
(B) The Deccan Plateau slopes predominantly from east to west.
(C) The Central Highlands are drained by rivers flowing westward to the Arabian Sea.
(D) The Central Highlands are completely isolated from the Aravalli range.
(E) Answer not known

39. By definition, what is a 'Delta' in the context of coastal features?
(A) A submerged river mouth where freshwater mixes with seawater without any significant sediment deposition.
(B) A narrow and linear coastal strip flanked by steep mountain ranges along the western edge of India.
(C) A high-altitude mountain pass connecting two deep valleys within the Greater Himalayan range system.
(D) A triangular tract of sediment deposited at the mouth of a river, typically found along the Eastern Coast.
(E) Answer not known

40. Which is the highest peak in Peninsular India?
(A) Doddabetta
(B) Anaimudi
(C) Mahendragiri
(D) Mahabaleshwar
(E) Answer not known

41. What is the defining characteristic of the Eastern Coastal Plain compared to the Western Coastal Plain?
(A) It is extremely narrow and characterized by a highly indented and rocky shoreline.
(B) It is primarily characterized by the presence of large estuaries and deep backwaters.
(C) It is broad, flat, and formed by the deltas of major east-flowing rivers.
(D) It is completely devoid of any sandy beaches or significant maritime accumulation features.
(E) Answer not known

42. Read the following assertion and reason and select the correct answer from the options given below:
Assertion (A): The rivers originating in the Western Ghats and flowing into the Arabian Sea do not form deltas.
Reason (R): They have a short course and flow over a steep gradient, preventing significant sediment deposition.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

43. Match the regional names of the coastal plains with their geographic locations:
List I: (Regional Coastal Names)
P. Konkan Coast
Q. Malabar Coast
R. Coromandel Coast
S. Northern Circars
List II: (Geographic Locations)
I. Southern part of the Eastern Coastal Plain
II. Northern part of the Eastern Coastal Plain
III. Northern part of the Western Coastal Plain
IV. Southern part of the Western Coastal Plain
(A) P-III, Q-IV, R-I, S-II
(B) P-IV, Q-III, R-II, S-I
(C) P-III, Q-I, R-IV, S-II
(D) P-I, Q-II, R-III, S-IV
(E) Answer not known

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44. Which of the following pairs is incorrectly matched regarding the hill ranges of the Eastern Ghats?
(A) Nallamala Hills - Andhra Pradesh
(B) Shevaroy Hills - Karnataka
(C) Javadi Hills - Tamil Nadu
(D) Palkonda Range - Andhra Pradesh
(E) Answer not known

45. Consider the following statements about the Coromandel Coast:
I. It extends from the Krishna river delta to Kanyakumari.
II. It is largely characterized by sandy beaches and lagoons.
III. It receives the maximum rainfall during the South-West Monsoon.
Which of the above statement(s) is/are incorrect?
(A) I and II
(B) III only
(C) II and III
(D) I only
(E) Answer not known

46. Identify the correct statement regarding the islands of India.
(A) The Ten Degree Channel separates the Andaman group from the Nicobar group.
(B) The Andaman and Nicobar Islands are of coral origin.
(C) Lakshadweep Islands are volcanic in origin.
(D) Port Blair is located in the Nicobar group of islands.
(E) Answer not known

47. Which of the following represents the correct sequence of passes in the Western Ghats from North to South?
(A) Thal Ghat, Bhor Ghat, Palghat, Shencottah Gap
(B) Bhor Ghat, Thal Ghat, Shencottah Gap, Palghat
(C) Thal Ghat, Palghat, Bhor Ghat, Shencottah Gap
(D) Palghat, Thal Ghat, Bhor Ghat, Shencottah Gap
(E) Answer not known

48. How does the Deccan Plateau's soil composition make it economically significant?
(A) Rich alluvial soil deposits promote large-scale wheat cultivation across the entire plateau.
(B) Widespread red soil deposits support extensive tea plantations throughout the central region.
(C) Peaty soils allow for maximum paddy yields compared to the fertile northern river plains.
(D) The presence of black soil, formed by basaltic lava, is ideal for cotton cultivation.
(E) Answer not known

49. Consider the following statements about the Western Ghats:
I. They run parallel to the western coast and are continuous.
II. Their average elevation increases from north to south.
III. They receive heavy orographic rainfall.
IV. The Eastern coastal rivers originate from the Western Ghats.
Which of the above statement(s) is/are correct?
(A) I, II and III
(B) II, III and IV
(C) I, III and IV
(D) I and IV
(E) Answer not known

50. Identify the incorrect statement concerning Tamil Nadu's geographical location.
(A) It is situated at the southern extremity of the Indian Peninsula.
(B) Its longitudinal extent is strictly confined to the western hemisphere.
(C) It is bounded by the Bay of Bengal in the east and the Arabian Sea in the west.
(D) Its latitudinal extent is roughly 8°4'N to 13°35'N.
(E) Answer not known

51. Arrange the following hill ranges of Tamil Nadu in the correct sequence from North to South:
I. Palani Hills
II. Nilgiri Hills
III. Cardamom Hills
IV. Anamalai Hills
(A) II, IV, I, III
(B) II, I, IV, III
(C) I, II, IV, III
(D) IV, II, I, III
(E) Answer not known

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52. What defines an 'Archipelago' in the context of physical features?
(A) An extensive group of closely scattered islands, such as the Andaman and Nicobar group.
(B) A deep and narrow gorge carved by a perennial river through hard mountain rocks.
(C) A coastal region dominated by mangrove swamps and salt marshes found in tropical estuaries.
(D) A high-altitude and cold desert plateau region located in the northernmost part of a mountain range.
(E) Answer not known

53. Read the following assertion and reason and select the correct answer from the options given below:
Assertion (A): The Nilgiris are considered the junction of the Eastern and Western Ghats.
Reason (R): It is in this mountainous node that the discontinuous Eastern Ghats merge with the continuous Western Ghats.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

54. Match the boundaries of Tamil Nadu with their corresponding directions:
List I: (Directions)
P. North
Q. West
R. South
S. East
List II: (Boundaries)
I. Bay of Bengal
II. Indian Ocean
III. Andhra Pradesh
IV. Kerala
(A) P-III, Q-IV, R-II, S-I
(B) P-IV, Q-III, R-I, S-II
(C) P-III, Q-I, R-IV, S-II
(D) P-I, Q-IV, R-III, S-II
(E) Answer not known

55. Which of the following pairs regarding Tamil Nadu's peaks is correctly matched?
(A) Doddabetta - Anamalai Hills
(B) Perumal Peak - Nilgiri Hills
(C) Agasthiyar Malai - Javadi Hills
(D) Vembadi Shola - Palani Hills
(E) Answer not known

56. Consider the following statements about the major physiographic zones of Tamil Nadu:
I. The state can be broadly divided into the Western Ghats, Eastern Ghats, Plateaus, Coastal Plains, and Inland Plains.
II. The Western Ghats in Tamil Nadu are completely continuous without any passes.
III. The Palghat gap provides a major communication route between Tamil Nadu and Kerala.
IV. The Eastern Ghats are structurally folded and continuous ranges.
V. The Cauvery delta forms a major part of the eastern plains.
Which of the above statement(s) is/are incorrect?
(A) I, II and IV
(B) II and IV
(C) III, IV and V
(D) I, III and V
(E) Answer not known

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57. Identify the key feature of the Gulf of Mannar region.
(A) It is exclusively known for large-scale offshore oil and natural gas extraction.
(B) It separates the Andaman island chain from the Nicobar group in the Bay of Bengal.
(C) It hosts the first Marine Biosphere Reserve in South and South-East Asia.
(D) It is a deep-water ocean trench located within the central part of the Arabian Sea.
(E) Answer not known

58. Comparing the Andaman and Nicobar Islands with the Lakshadweep Islands, which of the following is true?
(A) Lakshadweep Islands are more numerous and significantly larger in size than the Andaman Islands.
(B) The Andaman Islands have a coral origin, while the Lakshadweep group has a volcanic origin.
(C) Both of these island groups are completely

uninhabited by any permanent human populations.
(D) Andaman and Nicobar are in the Bay of Bengal, whereas Lakshadweep is in the Arabian Sea.
(E) Answer not known

59. Where is the Palk Strait located?
(A) Between mainland India and the nation of Sri Lanka.
(B) Between the Gujarat coast and the Kathiawar peninsula.
(C) Between the Andaman and the Nicobar island groups.
(D) Between Lakshadweep and the Malabar coastal region.
(E) Answer not known

60. Identify the correct statement regarding the coastline of Tamil Nadu.
(A) It has the longest continuous coastline among all of the coastal states in India.
(B) The coastline of Tamil Nadu is 1,076 km, making it the second longest in mainland India.
(C) It is bordered by the Arabian Sea to its immediate east and the Indian Ocean south.
(D) Mangrove forests are completely absent along the entire stretch of the Tamil Nadu coast.
(E) Answer not known

61. What is the prominent rock formation found extensively in Tamil Nadu?
(A) Deccan Trap basaltic rocks.
(B) Charnockite and Archaean gneiss.
(C) Gondwana sandstone formations.
(D) Himalayan limestone deposits.
(E) Answer not known

62. Read the following assertion and reason and select the correct answer from the options given below:
Assertion (A): The Eastern Ghats in Tamil Nadu are highly discontinuous and irregular.
Reason (R): They have been heavily eroded and dissected by major rivers flowing eastward into the Bay of Bengal.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

63. Match the hill stations of Tamil Nadu with the mountain ranges they are situated in:
List I: (Hill Stations)
P. Ooty
Q. Kodaikanal
R. Yercaud
S. Yelagiri
List II: (Mountain Ranges)
I. Shevaroy Hills
II. Javadi Hills
III. Nilgiri Hills
IV. Palani Hills
(A) P-III, Q-IV, R-I, S-II
(B) P-III, Q-I, R-IV, S-II
(C) P-IV, Q-III, R-II, S-I
(D) P-I, Q-IV, R-III, S-II
(E) Answer not known

64. Which of the following pairs regarding the rivers of Tamil Nadu and their associated plains/basins is incorrectly matched?
(A) Cauvery - Thanjavur and Nagapattinam
(B) Palar - Northern plains of Tamil Nadu
(C) Vaigai - Southern plains around Madurai
(D) Thamirabarani - Central plains around Salem
(E) Answer not known

65. Consider the following statements about the important peaks of Tamil Nadu:
I. Doddabetta is the highest peak in the Nilgiri Hills.
II. Mukkuruthi is a prominent peak located in the Palani Hills.
III. Anaimudi is located on the border and shared with Kerala.
Which of the above statement(s) is/are correct?
(A) I and II
(B) I and III
(C) II and III
(D) I only
(E) Answer not known

66. Identify the correct statement about the Cauvery delta region in Tamil Nadu.
(A) It is formed by major rivers flowing

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westward directly into the Arabian Sea.
(B) It is known as the 'Granary of South India' due to extensive alluvial deposits.
(C) It is primarily characterized by deep mountain gorges and narrow rift valleys.
(D) It primarily consists of arid, sandy desert terrain and shifting sand dunes.
(E) Answer not known

67. Which of the following represents the correct sequence of major Tamil Nadu rivers from North to South?
(A) Palar, Pennaiyar, Cauvery, Vaigai, Thamirabarani
(B) Pennaiyar, Palar, Cauvery, Thamirabarani, Vaigai
(C) Palar, Cauvery, Pennaiyar, Vaigai, Thamirabarani
(D) Cauvery, Palar, Pennaiyar, Vaigai, Thamirabarani
(E) Answer not known

68. How does the Gulf of Mannar Biosphere Reserve contribute to conservation in Tamil Nadu?
(A) By conserving rare marine biodiversity such as coral reefs and Dugong (sea cow).
(B) By protecting and monitoring the high-altitude Shola forest and grassland zones.
(C) By preserving the ancient Archaean rock monuments and crystalline basement formations.
(D) By managing the large tiger populations found within the southern Western Ghats.
(E) Answer not known

69. Consider the following statements about Palk Strait and Palk Bay:
I. Palk Strait connects the Bay of Bengal with Palk Bay.
II. Palk Bay is situated to the south of the Gulf of Mannar.
III. Adam's Bridge separates Palk Bay from the Gulf of Mannar.
IV. The strait is deep enough for large ocean liners to navigate freely.
Which of the above statement(s) is/are correct?
(A) I and III
(B) II, III and IV
(C) I, II and III
(D) III and IV
(E) Answer not known

70. Identify the incorrect statement regarding Adam's Bridge (Rama Setu).
(A) It is a continuous, elevated mountain range formed by tectonic uplift.
(B) It is a chain of limestone shoals.
(C) It extends between Dhanushkodi in India and Talaimannar in Sri Lanka.
(D) It separates the Gulf of Mannar from Palk Bay.
(E) Answer not known

71. Arrange the following hill ranges of the Eastern Ghats in Tamil Nadu in the correct sequence from North to South:
I. Pachaimalai
II. Shevaroy Hills
III. Javadi Hills
IV. Kolli Hills
(A) III, II, IV, I
(B) III, IV, II, I
(C) II, III, I, IV
(D) II, I, IV, III
(E) Answer not known

72. By definition, what is a 'Biosphere Reserve' in the context of the Gulf of Mannar?
(A) An area strictly reserved for the conduct of large-scale military naval exercises.
(B) An area recognized for conserving genetic diversity and promoting sustainable development.
(C) A zone dedicated entirely to commercial deep-sea fishing and maritime mineral trade.
(D) An artificial water body created by damming a major perennial river for irrigation.
(E) Answer not known

73. Read the following assertion and reason and select the correct answer from the options given below:
Assertion (A): The Gulf of Mannar is highly significant for marine fisheries in Tamil Nadu.
Reason (R): It harbors diverse marine ecosystems including coral reefs, sea-grass beds, and mangroves that act as breeding grounds.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.

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(D) A is false but R is true.
(E) Answer not known

74. Match the peaks of Tamil Nadu with their approximate heights in meters:
List I: (Peaks)
P. Doddabetta
Q. Mukkuruthi
R. Vembadi Shola
S. Perumal Peak
List II: (Approximate Height in meters)
I. 2637
II. 2554
III. 2505
IV. 2234
(A) P-I, Q-II, R-III, S-IV
(B) P-II, Q-I, R-IV, S-III
(C) P-I, Q-III, R-II, S-IV
(D) P-III, Q-II, R-I, S-IV
(E) Answer not known

75. Which of the following pairs regarding the administrative setup of Tamil Nadu is incorrectly matched?
(A) Taluks - Lowest level of rural self-governance equivalent to a village panchayat
(B) Total number of districts - 38
(C) Revenue divisions - Serve as an intermediate layer between districts and taluks
(D) Chennai - A district that also functions as a major metropolitan area
(E) Answer not known

76. Consider the following statements about the major rivers in Tamil Nadu:
I. The Cauvery originates in the Brahmagiri hills of Karnataka.
II. The Palar river flows predominantly through the southern districts of Tamil Nadu.
III. The Vaigai river completely dries up before reaching the Bay of Bengal.
IV. The Thamirabarani is a perennial river originating in the Agasthiyar hills.
V. The Pennaiyar river flows eastwards and drains into the Bay of Bengal.
Which of the above statement(s) is/are correct?
(A) I, II, III and IV
(B) I, IV and V
(C) II, III, IV and V
(D) I, II and V
(E) Answer not known

77. Identify the distinguishing feature of the Kolli Hills in Tamil Nadu.
(A) They are completely devoid of any forest cover and are barren rocky outcrops.
(B) It is in Namakkal district and has a well-preserved evergreen forest.
(C) They represent the highest continuous range found within the entire Western Ghats.
(D) They are primarily formed of limestone karst topography and extensive cave systems.
(E) Answer not known

78. Comparing Doddabetta and Anaimudi, which of the following statements is true?
(A) Anaimudi is the highest in South India; Doddabetta is the highest in the Nilgiris.
(B) Doddabetta is significantly taller than Anaimudi in terms of absolute altitude.
(C) Both of these mountain peaks belong exclusively to the fragmented Eastern Ghats.
(D) Anaimudi is located in Tamil Nadu, whereas Doddabetta is situated strictly in Kerala.
(E) Answer not known

79. How does the physical presence of Adam's Bridge affect maritime navigation in the region?
(A) It creates a deep natural channel ideal for the passage of large cargo ships.
(B) It connects directly to the Arabian Sea currents, speeding up regional travel.
(C) Shallow waters prevent large ships from passing, forcing circumnavigation of Sri Lanka.
(D) It allows submarine navigation directly into the deep waters of the Indian Ocean.
(E) Answer not known

80. Identify the correct statement regarding the hill stations of Tamil Nadu.
(A) Kodaikanal is a prominent hill station located entirely within the Nilgiri Hills.
(B) Udhagamandalam (Ooty) is a hill station situated specifically in the Palani Hills.
(C) Yelagiri is a prominent coastal town located along the Bay of Bengal in Tamil Nadu.
(D) Yercaud is referred to as the 'Poor man's Ooty' and is in the Shevaroy Hills.
(E) Answer not known

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81. Which administrative unit in Tamil Nadu forms the immediate hierarchical level below a Revenue Division?
(A) District
(B) Firka
(C) Taluk
(D) Panchayat Union
(E) Answer not known

82. Read the following assertion and reason and select the correct answer from the options given below:
Assertion (A): Kanyakumari holds a unique geographical and cultural significance in India.
Reason (R): It is the southernmost tip of the Indian mainland and marks the confluence of the Arabian Sea, the Bay of Bengal, and the Indian Ocean.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

83. Match the geographical zones of Tamil Nadu with their representative districts:
List I: (Geographical Zones)
P. Northern Zone
Q. Western Zone
R. Central Zone
S. Southern Zone
List II: (Representative Districts)
I. Coimbatore, Tiruppur
II. Madurai, Tirunelveli
III. Chennai, Tiruvallur
IV. Tiruchirappalli, Thanjavur
(A) P-III, Q-I, R-IV, S-II
(B) P-I, Q-II, R-III, S-IV
(C) P-III, Q-IV, R-I, S-II
(D) P-II, Q-III, R-IV, S-I
(E) Answer not known

84. Which of the following pairs regarding rock formations and their occurrences in Tamil Nadu is correctly matched?
(A) Charnockite - Predominantly found in the Nilgiris and Chennai region
(B) Gondwana Rocks - Widespread uniformly across the Western Ghats
(C) Marine Sedimentary - Dominant in the central plateaus
(D) Deccan Traps - Covers the entire southern zone
(E) Answer not known

85. Consider the following statements about the administrative divisions of Tamil Nadu:
I. The state is divided into districts for administrative convenience.
II. Districts are further sub-divided directly into Village Panchayats without intermediate levels.
III. Taluks are grouped to form Revenue Divisions.
Which of the above statement(s) is/are correct?
(A) I and II
(B) I and III
(C) II and III
(D) I only
(E) Answer not known

86. Identify the correct statement regarding the Archaean rock formations in Tamil Nadu.
(A) They form the oldest crystalline basement rocks, covering over two-thirds of the state.
(B) They are the youngest rock formations in the state.
(C) They are primarily composed of soft, sedimentary rocks holding large fossil reserves.
(D) They are strictly localized to the coastal plains.
(E) Answer not known

87. Which of the following represents the correct hierarchical sequence of administrative divisions in Tamil Nadu from highest to lowest?
I. District, Taluk, Revenue Division, Firka, Revenue Village
II. District, Revenue Division, Taluk, Firka, Revenue Village
III. Revenue Division, District, Taluk, Firka, Revenue Village
IV. District, Revenue Division, Firka, Taluk, Revenue Village
(A) District, Taluk, Revenue Division, Firka, Revenue Village
(B) District, Revenue Division, Taluk, Firka, Revenue Village
(C) Revenue Division, District, Taluk, Firka,

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Revenue Village
(D) District, Revenue Division, Firka, Taluk, Revenue Village
(E) Answer not known

88. How does the widespread presence of granite and charnockite rocks economically benefit Tamil Nadu?
(A) They contain vast reserves of crude oil and natural gas within deep formations.
(B) They are used as construction materials, dimension stones, and in monument building.
(C) They act as the primary geological source for large-scale diamond mining operations.
(D) They weather into fertile peat soils, promoting the growth of major cash crop agriculture.
(E) Answer not known

89. Consider the following statements regarding the geographical classifications of Tamil Nadu:
I. The Western Zone is heavily industrialized and known for textile manufacturing.
II. The Central Zone encompasses the fertile Cauvery delta.
III. The Southern Zone receives the maximum annual rainfall in the state.
IV. The Northern Zone includes the capital city and major automobile hubs.
Which of the above statement(s) is/are correct?
(A) I, II and III
(B) I, II and IV
(C) II, III and IV
(D) I and IV
(E) Answer not known

90. Identify the incorrect statement regarding the coastal districts of Tamil Nadu.
(A) Kanyakumari shares borders with both the Arabian Sea and the Bay of Bengal.
(B) Nagapattinam suffered severe damage during the 2004 Indian Ocean Tsunami.
(C) Ramanathapuram forms part of the Gulf of Mannar coastline.
(D) Chennai is completely landlocked.
(E) Answer not known

91. Arrange the following coastal districts of Tamil Nadu in the correct sequence from North to South:
I. Chengalpattu
II. Chennai
III. Tiruvallur
IV. Villupuram
(A) III, II, I, IV
(B) II, III, I, IV
(C) III, I, II, IV
(D) I, II, III, IV
(E) Answer not known

92. Identify the prominent districts that make up the Central Geographical Zone of Tamil Nadu.
(A) Nilgiris, Erode, Salem
(B) Tiruchirappalli, Thanjavur, Tiruvarur
(C) Kanyakumari, Thoothukudi, Tirunelveli
(D) Kanchipuram, Tiruvallur, Vellore
(E) Answer not known

93. Read the following assertion and reason and select the correct answer from the options given below:
Assertion (A): Charnockite rocks are frequently exposed in the Eastern Ghats of Tamil Nadu.
Reason (R): These regions have experienced significant uplift and deep erosion, exposing the ancient, deep-seated metamorphic rocks.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

94. Match the rock types found in Tamil Nadu with their geological descriptions:
List I: (Rock Types)
P. Archaean Gneiss
Q. Cretaceous Sedimentary
R. Tertiary Sandstone
S. Quaternary Alluvium
List II: (Geological Descriptions)
I. Oldest crystalline rocks forming the basement
II. Fossil-bearing rocks prominent in Ariyalur
III. Found primarily in the Cuddalore region
IV. Recent deposits along river valleys and coasts
(A) P-I, Q-II, R-III, S-IV
(B) P-I, Q-III, R-II, S-IV
(C) P-II, Q-I, R-IV, S-III

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(D) P-IV, Q-III, R-II, S-I
(E) Answer not known

95. Which of the following pairs regarding the districts and their geographical zones is incorrectly matched?
(A) Coimbatore - Western Zone
(B) Madurai - Southern Zone
(C) Salem - Northern Zone
(D) Thanjavur - Central Zone
(E) Answer not known

96. Consider the following statements summarizing the physical features of Tamil Nadu:
I. It is bordered by Kerala to the west and Karnataka to the northwest.
II. The Western Ghats act as an unbroken continuous wall blocking the southwest monsoon completely.
III. The coastal plains are formed by rivers like Cauvery, Vaigai, and Thamirabarani.
IV. The Eastern Ghats merge with the Western Ghats at the Nilgiris.
V. Red soil is the most widely distributed soil type in the state.
Which of the above statement(s) is/are correct?
(A) I, III, IV and V
(B) II, III, IV and V
(C) I, II and IV
(D) I, II, III and V
(E) Answer not known

97. Identify the critical feature of the Gulf of Mannar Biosphere Reserve that distinguishes it globally.
(A) It is recognized as the largest single freshwater lake found within mainland India.
(B) It is entirely covered by a dense and continuous canopy of alpine coniferous forests.
(C) It contains 21 islands providing habitat to endangered species like the sea cow.
(D) It is a recognized cold desert area located in the rain-shadow of the Western Ghats.
(E) Answer not known

98. When comparing the Western Zone and Central Zone of Tamil Nadu geographically, which statement is true?
(A) The Western Zone is primarily coastal, whereas the Central Zone is strictly mountainous.
(B) Central Zone has deltaic plains; Western Zone has plateaus and the Western Ghats.
(C) The Western Zone relies exclusively on the North-East monsoon, unlike the Central Zone.
(D) The Central Zone features all of the highest mountain peaks found within the state.
(E) Answer not known

99. Comparing the Cauvery basin with the Vaigai basin, which of the following is correct?
(A) The Vaigai basin is larger and carries significantly more water than the Cauvery basin.
(B) Both rivers originate in the high-altitude Western Ghats located within Karnataka.
(C) The Vaigai basin lies entirely to the north of the more extensive Cauvery river basin.
(D) The Cauvery delta is much more extensive and productive than the Vaigai delta.
(E) Answer not known

100. Comparing the Gulf of Mannar and Palk Strait, which of the following statements is accurate?
(A) The Gulf of Mannar is located south of Adam's Bridge, whereas Palk Strait is to the north.
(B) Both are deep-water bodies permitting unhindered navigation of massive oil tankers.
(C) Palk Strait is renowned for its rich coral islands, while the Gulf of Mannar is completely barren.
(D) They completely isolate the Andaman Islands from mainland India.
(E) Answer not known

101. Which specific agricultural activity is predominantly supported by the geographical conditions of the Nilgiris and Anamalai hills?
(A) Extensive mechanized wheat cultivation.
(B) Large-scale commercial jute farming.
(C) Plantation crops like tea, coffee, and spices.
(D) Saffron cultivation in high altitudes.
(E) Answer not known

102. Read the following assertion and reason and select the correct answer from the options given below:

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Assertion (A): The winter season in Tamil Nadu is generally mild and devoid of severe cold.
Reason (R): Its geographical location near the equator and the moderating influence of the surrounding oceans prevent extreme temperature drops.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

103. Match the specific forest types with the physiographic regions of Tamil Nadu where they are found:
List I: (Forest Types)
P. Tropical Evergreen Forests
Q. Mangrove Forests
R. Shola Forests
S. Tropical Deciduous Forests
List II: (Physiographic Regions)
I. Pitchavaram and Vedaranyam
II. High altitudes of Nilgiris and Anamalai
III. Lower slopes of Eastern and Western Ghats
IV. Western Ghats facing the Arabian Sea windward side
(A) P-IV, Q-I, R-II, S-III
(B) P-I, Q-IV, R-III, S-II
(C) P-IV, Q-II, R-I, S-III
(D) P-III, Q-I, R-IV, S-II
(E) Answer not known

104. Which of the following pairs regarding waterfalls in Tamil Nadu and their districts is correctly matched?
(A) Courtallam - Coimbatore
(B) Hogenakkal - Dharmapuri
(C) Suruli - Salem
(D) Agaya Gangai - Kanyakumari
(E) Answer not known

105. Consider the following statements about the climate of Tamil Nadu:
I. Tamil Nadu relies primarily on the North-East monsoon for its rainfall.
II. The South-West monsoon provides very little rain to the eastern coastal districts.
III. Cyclonic storms during October to December bring heavy rainfall to the state.
Which of the above statement(s) is/are correct?
(A) I and II
(B) II and III
(C) I only
(D) I, II and III
(E) Answer not known

106. Identify the correct statement regarding the Pichavaram mangroves.
(A) It is the largest mangrove forest in the world.
(B) It is formed by the backwaters of the Vaigai river.
(C) Mangroves here are completely devoid of any root system adaptations.
(D) It is located near Chidambaram in the Cuddalore district of Tamil Nadu.
(E) Answer not known

107. Which of the following represents the correct sequence of major soil types found in Tamil Nadu based on their areal extent from largest to smallest?
I. Red Soil, Black Soil, Alluvial Soil, Laterite Soil
II. Black Soil, Red Soil, Alluvial Soil, Laterite Soil
III. Alluvial Soil, Red Soil, Black Soil, Laterite Soil
IV. Red Soil, Alluvial Soil, Black Soil, Laterite Soil
(A) Red Soil, Black Soil, Alluvial Soil, Laterite Soil
(B) Black Soil, Red Soil, Alluvial Soil, Laterite Soil
(C) Alluvial Soil, Red Soil, Black Soil, Laterite Soil
(D) Red Soil, Alluvial Soil, Black Soil, Laterite Soil
(E) Answer not known

108. How does the geographical feature of the Palghat Gap influence the climate of neighboring districts in Tamil Nadu?
(A) It acts as a barrier, preventing any winds from entering the state of Tamil Nadu.
(B) It channels southwest monsoon winds into Coimbatore, moderating its climate.
(C) It strictly funnels cyclonic storms from the Bay of Bengal directly into Kerala.
(D) It causes an extreme drop in temperature,

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leading to heavy snowfall in Tiruppur.
(E) Answer not known

109. Consider the following statements about the mineral resources of Tamil Nadu:
I. Neyveli is renowned for its vast lignite reserves.
II. Magnesite deposits are predominantly found in the Salem region.
III. Tamil Nadu is the largest producer of copper ore in India.
IV. Beach sands in Kanyakumari contain ilmenite and rutile.
Which of the above statement(s) is/are correct?
(A) I, II and IV
(B) I, II and III
(C) II, III and IV
(D) I and IV
(E) Answer not known

110. Identify the incorrect statement about the Thamirabarani river.
(A) It is a major tributary of the Cauvery river.
(B) It is the only major perennial river in Tamil Nadu.
(C) It originates from the Agasthiyar hills in the Western Ghats.
(D) It flows exclusively through the districts of Tirunelveli and Thoothukudi.
(E) Answer not known

111. Arrange the following reservoirs and dams of Tamil Nadu in the correct sequence from North to South:
I. Mettur Dam
II. Bhavanisagar Dam
III. Vaigai Dam
IV. Papanasam Dam
(A) I, II, III, IV
(B) II, I, III, IV
(C) I, III, II, IV
(D) II, III, I, IV
(E) Answer not known

112. What defines a 'Shola' forest in the physiography of Tamil Nadu?
(A) Dry deciduous forests found exclusively along the vast eastern coastal plains.
(B) Mangrove swamps developed in the estuarine regions of major perennial rivers.
(C) Thorn forests dominant in the arid rain-shadow regions found within the state.
(D) Stunted tropical montane evergreen forests in high-altitude valleys and grasslands.
(E) Answer not known

113. Read the following assertion and reason and select the correct answer from the options given below:
Assertion (A): The districts of Ramanathapuram and Thoothukudi form the driest region in Tamil Nadu.
Reason (R): They lie in the rain-shadow region of the Western Ghats during the South-West monsoon and are away from the main track of the North-East monsoon.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

114. Match the industrial hubs of Tamil Nadu with their primary geographical and economic identity:
List I: (Industrial Hubs)
P. Coimbatore
Q. Tiruppur
R. Sivakasi
S. Karur
List II: (Economic Identity)
I. Knitwear Capital
II. Manchester of South India
III. Home textile hub
IV. Matchbox and Fireworks
(A) P-II, Q-I, R-IV, S-III
(B) P-I, Q-II, R-III, S-IV
(C) P-II, Q-IV, R-I, S-III
(D) P-III, Q-I, R-IV, S-II
(E) Answer not known

115. Which of the following pairs regarding wildlife sanctuaries in Tamil Nadu is correctly matched?
(A) Point Calimere Wildlife Sanctuary - Kanyakumari district
(B) Mundanthurai Tiger Reserve - Erode district
(C) Vedanthangal Bird Sanctuary - Madurai district
(D) Mudumalai Wildlife Sanctuary - Nilgiris district

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(E) Answer not known

116. Consider the following statements about the coastal landforms of Tamil Nadu:

I. Marina Beach is the second longest urban beach in the world.
II. Estuaries are common along the Tamil Nadu coast due to the fast-flowing eastward rivers.
III. Coral reefs are prominently found around the islands in the Gulf of Mannar.
IV. Vedaranyam is known for its extensive salt swamps.
V. The coast is entirely immune to cyclonic disturbances.

Which of the above statement(s) is/are correct?
(A) I, III and IV
(B) I, II, III and IV
(C) II, III, IV and V
(D) I, IV and V
(E) Answer not known

117. Identify the key geographical feature of the Palar river basin.
(A) It forms a massive delta comparable in scale to the Sundarbans of West Bengal.
(B) It originates in the Eastern Ghats and flows westwards into the Arabian Sea.
(C) It predominantly drains Vellore and Kanchipuram before entering the Bay of Bengal.
(D) It maintains a consistently heavy flood discharge throughout the entire calendar year.
(E) Answer not known

118. Comparing the climate of Chennai and Coimbatore, which of the following statements is true?
(A) Chennai is humid and monsoon-fed; Coimbatore is milder due to the Palghat gap.
(B) Chennai experiences extreme winters, whereas Coimbatore has a hot, desert climate.
(C) Both cities receive their maximum annual rainfall during the South-West monsoon.
(D) Coimbatore is highly prone to tropical cyclones originating in the Bay of Bengal.
(E) Answer not known

119. How does the geographical presence of the Eastern Ghats impact agriculture in the central districts of Tamil Nadu?
(A) They block all rivers, turning the central districts into a barren and arid desert.
(B) They provide a massive, flat plateau solely used for high-altitude apple orchards.
(C) They prevent any rainfall from reaching the state, forcing dependence on groundwater.
(D) Discontinuous nature allows rivers to pass, depositing fertile alluvium in central plains.
(E) Answer not known

120. Identify the correct statement regarding the laterite soils of Tamil Nadu.
(A) They are the most fertile soils and cover the entire stretch of the coastal plain.
(B) Formed by leaching under high temp and rainfall, found in Kanchipuram and Nilgiris.
(C) They are highly retentive of moisture and ideal for dryland cotton farming projects.
(D) They are transported soils brought down by the seasonal flow of the Cauchy river.
(E) Answer not known

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121. Identify the incorrect statement regarding the demographic distribution tied to Tamil Nadu's physical geography.
(A) The Cauvery delta region is characterized by high population density due to agricultural prosperity.
(B) The mountainous regions of the Nilgiris have a sparsely distributed population.
(C) The arid regions of Ramanathapuram have the highest population density in the state.
(D) Coastal cities like Chennai display very high urban population density due to industrial and commercial activities.
(E) Answer not known

122. Read the following assertion and reason and select the correct answer from the options given below:

Assertion (A): The East Coast Road (ECR) running parallel to the Bay of Bengal is highly vulnerable to coastal erosion.

Reason (R): Rising sea levels, storm surges during cyclones, and interruption of littoral drift by human structures exacerbate erosion along the Coromandel coast.

(A) Both A and R are true and R is the correct

explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

123. Match the specific geological resources of Tamil Nadu with their major districts of occurrence:
List I: (Geological Resources)
P. Lignite
Q. Bauxite
R. Magnesite
S. Limestone
List II: (Major Districts)
I. Salem
II. Cuddalore (Neyveli)
III. Ariyalur
IV. Shevaroy Hills
(A) P-II, Q-IV, R-I, S-III
(B) P-II, Q-I, R-IV, S-III
(C) P-IV, Q-II, R-III, S-I
(D) P-I, Q-III, R-II, S-IV
(E) Answer not known

124. Which of the following pairs regarding physical features and their local names in Tamil Nadu is incorrectly matched?
(A) Palghat Gap - Palakkad Pass
(B) Adam's Bridge - Pamban Pass
(C) Eastern Ghats - Poorvadri
(D) Western Ghats - Sahyadri
(E) Answer not known

125. Consider the following statements concerning the energy geography of Tamil Nadu:
I. Muppandal is recognized globally for its high concentration of wind farms.
II. The state relies heavily on hydel power generated solely from the Eastern Ghats.
III. Kamuthi in Ramanathapuram district houses one of the largest single-location solar power plants in the world.
Which of the above statement(s) is/are correct?
(A) I and III
(B) I and II
(C) II and III
(D) III only
(E) Answer not known

126. Identify the primary characteristic of the black soils found in regions like Coimbatore and Madurai.
(A) They have self-ploughing capacity and moisture retention, ideal for cotton.
(B) They are rich in humus and extremely acidic due to high organic decomposition.
(C) They are highly leached and poor in calcium, making them unsuitable for crops.
(D) They are formed primarily by the deposition of river allivium in coastal areas.
(E) Answer not known

127. Which of the following represents the correct sequential order of major wetlands and lakes in Tamil Nadu from North to South?
I. Pulicat Lake, Kaliveli Lake, Ousteri Lake, Point Calimere
II. Point Calimere, Pulicat Lake, Kaliveli Lake, Ousteri Lake
III. Kaliveli Lake, Pulicat Lake, Ousteri Lake, Point Calimere
IV. Pulicat Lake, Point Calimere, Kaliveli Lake, Ousteri Lake
(A) Pulicat Lake, Kaliveli Lake, Ousteri Lake, Point Calimere
(B) Point Calimere, Pulicat Lake, Kaliveli Lake, Ousteri Lake
(C) Kaliveli Lake, Pulicat Lake, Ousteri Lake, Point Calimere
(D) Pulicat Lake, Point Calimere, Kaliveli Lake, Ousteri Lake
(E) Answer not known

128. How does the geographical location of Thoothukudi facilitate its economic activities?
(A) Being a high-altitude city, it is a major center for specialized tea processing.
(B) Its location on the banks of the Cauchy makes it a center for hydroelectric power.
(C) Its dense forest cover makes it the primary timber export hub of the entire state.
(D) Sheltered coastal location with a natural harbor makes it a port and salt hub.
(E) Answer not known

129. Consider the following statements about disaster vulnerability in Tamil Nadu's geography:
I. The coastal districts are highly prone to cyclonic storms during the North-East monsoon.

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II. The Nilgiris region frequently experiences landslides during periods of heavy rainfall.
III. Tamil Nadu falls in the highest seismic risk zone (Zone V) of India.
IV. Tsunami is a potential threat to the eastern coastline.

Which of the above statement(s) is/are correct?
(A) I, II and IV
(B) I, II and III
(C) II, III and IV
(D) I and IV
(E) Answer not known

130. Identify the incorrect statement regarding the drainage pattern in Tamil Nadu.
(A) Most rivers in the state flow from west to east.
(B) The state possesses a massive inland drainage system ending in desert salt lakes.
(C) The drainage pattern is heavily influenced by the topography sloping towards the Bay of Bengal.
(D) The rivers of Tamil Nadu are predominantly rain-fed and non-perennial.
(E) Answer not known

131. Arrange the following hill peaks of the Western Ghats in Tamil Nadu in descending order of their altitude:
I. Doddabetta
II. Mukkuruthi
III. Vembadi Shola
IV. Perumal Peak
(A) I, II, III, IV
(B) II, I, III, IV
(C) I, III, II, IV
(D) I, IV, II, III
(E) Answer not known

132. Identify the prominent feature of the Vaigai river basin.
(A) Originates in Varusanadu hills, flows through Madurai, and empties into Palk Bay.
(B) It is a snow-fed river providing year-round irrigation to the northern districts.
(C) It merges with the Cauchy river near the central city of Tiruchirappalli.
(D) It flows westwards and drains into the Arabian Sea near the city of Kochi.
(E) Answer not known

133. Read the following assertion and reason and select the correct answer from the options given below:
Assertion (A): Agriculture in Tamil Nadu is highly dependent on groundwater extraction.
Reason (R): Surface water resources are limited due to the non-perennial nature of most rivers and erratic monsoon rainfall.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

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134. Match the specific soil types of Tamil Nadu with their primary regions of occurrence:
List I: (Soil Types)
P. Alluvial Soil
Q. Black Soil
R. Laterite Soil
S. Saline/Coastal Soil
List II: (Primary Regions)
I. Cauchy delta region
II. Coimbatore and Virudhunagar
III. Nilgiris and Kanchipuram
IV. Vedaranyam and Ramanathapuram coast
(A) P-I, Q-II, R-III, S-IV
(B) P-II, Q-I, R-IV, S-III
(C) P-I, Q-III, R-II, S-IV
(D) P-III, Q-I, R-IV, S-II
(E) Answer not known

135. Which of the following pairs regarding biosphere reserves and their dominant ecosystems in Tamil Nadu is incorrectly matched?
(A) Nilgiri Biosphere Reserve - Montane Shola and grassland
(B) Gulf of Mannar Biosphere Reserve - Coral reefs and marine ecosystem
(C) Agasthyamalai Biosphere Reserve - Tropical wet evergreen forests
(D) Point Calimere Wildlife Sanctuary - Alpine tundra ecosystem
(E) Answer not known

136. Consider the following statements about the geo-economic aspects of Tamil Nadu:
I. The presence of limestone deposits in Ariyalur and Perambalur has led to a

concentration of cement industries.
II. Salem is known for its steel plant due to the availability of iron ore (magnetite).
III. The sandy beaches of the Coromandel coast are completely barren of any economic minerals.
IV. Granite quarrying is a major economic activity in the central and southern districts.
V. Petroleum refineries are non-existent in the state.

Which of the above statement(s) is/are correct?
(A) I, II and IV
(B) I, II, III and IV
(C) II, III, IV and V
(D) I, III and V
(E) Answer not known

137. Identify the key geographical attribute of the Pulicat Lake.
(A) It is recognized as the largest single freshwater lake within mainland India.
(B) It was formed by a sudden volcanic crater explosion in the prehistoric era.
(C) Brackish water lagoon at the border of Tamil Nadu and Andhra Pradesh.
(D) It is situated in the high-altitude rolling grasslands of the Palani hills.
(E) Answer not known

138. Comparing the Western Ghats and Eastern Ghats specifically within Tamil Nadu, which of the following is true?
(A) The Eastern Ghats are taller and receive more rainfall than the Western Ghats.
(B) Both of these mountain ranges are of volcanic origin and recent formation.
(C) The Eastern Ghats block the South-West monsoon completely from entering the state.
(D) Western Ghats run along the border; Eastern Ghats cut across northern/central districts.
(E) Answer not known

139. Comparing the agricultural patterns of the Cauvery delta and the Kongu region (Western Zone), which statement is accurate?
(A) Cauvery delta relies on canal irrigation; Kongu region depends on well irrigation.
(B) Both of these regions are purely rain-fed and cannot cultivate paddy or rice.
(C) The Kongu region is the 'Granary of South India' due to extensive alluvium.
(D) The Cauvery delta region predominantly grows high-altitude crops like tea.
(E) Answer not known

140. Comparing the Coromandel Coast with the Malabar Coast of India geographically, which of the following statements is correct?
(A) The Coromandel Coast receives bulk rainfall during summer instead of winter.
(B) Coromandel is wider with deltas; Malabar is narrower with lagoons and backwaters.
(C) The Coromandel Coast faces the Arabian Sea, whereas Malabar faces the Bay.
(D) The Coromandel Coast is entirely rocky and devoid of any sandy beach systems.
(E) Answer not known

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ANSWERS

1. (A) 8°4'N to 37°6'N and 68°7'E to 97°25'E
Mainland India is situated entirely in the Northern and Eastern Hemispheres. Its latitudinal span ranges from 8°4'N at Kanyakumari to 37°6'N in the north. Longitudinally, the country stretches from 68°7'E in Gujarat to 97°25'E in Arunachal Pradesh. This vast geographical expanse encompasses diverse climatic conditions and topographic features across the subcontinent's extensive territory.

2. (A) Both A and R are true and R is the correct explanation of A.
India's standard meridian is located at 82°30'E longitude, passing through Mirzapur in Uttar Pradesh. This specific meridian was chosen because it is centrally located within the country's longitudinal span of nearly thirty degrees. Selecting a central time zone ensures a uniform standard time across all states, preventing significant time lags and logistical confusion between eastern and western regions.

3. (A) P-III, Q-I, R-II, S-IV
India shares its longest international land border with Bangladesh, extending approximately 4,096.7 kilometers. The boundary with China follows at 3,488 kilometers, while the border with Pakistan measures 3,323 kilometers. Nepal shares a land boundary of 1,751 kilometers. These borders are crucial for national security and cross-border trade, reflecting India's significant geopolitical position within the South Asian region.

4. (A) Third longest coastline - Maharashtra
Gujarat possesses the longest coastline in India due to its numerous indentations. Andhra Pradesh follows with the second longest coastline, while Tamil Nadu ranks third. The claim that Maharashtra has the third longest coastline is incorrect according to official maritime data. The total length of the mainland coastline is approximately 6,100 kilometers, providing extensive maritime resources and trade opportunities.

5. (A) I and II
India is located entirely within the Northern and Eastern Hemispheres, occupying a central position in Southern Asia. Its strategic location at the head of the Indian Ocean facilitates maritime trade routes connecting Europe with East Asia. While India is the seventh largest country globally, it is not the largest in Asia, as Russia and China occupy larger landmasses.

6. (A) Territorial waters extend up to 12 nautical miles from the baseline.
A nation's territorial waters extend up to 12 nautical miles from the baseline, where it exercises full sovereignty. The contiguous zone extends to 24 nautical miles for specific enforcement like customs. The Exclusive Economic Zone reaches 200 nautical miles, granting exclusive rights for resource exploration and management. Understanding these zones is essential for maritime security and international sea law compliance.

7. (B) Bangladesh, China, Pakistan, Nepal
India's land boundaries vary significantly in length among its neighbors. Bangladesh shares the longest border at 4,096.7 kilometers, followed by China at 3,488 kilometers. Pakistan holds the third position with 3,323 kilometers, and Nepal shares 1,751 kilometers. This sequence accurately reflects the territorial contact India maintains with adjacent nations, which is vital for understanding regional geopolitics and border management.

8. (D) 8:00 AM
India spans approximately 30 degrees of longitude from west to east. Since the Earth rotates 15 degrees per hour, there is a two-hour time difference between the westernmost point in Gujarat and the easternmost point in Arunachal Pradesh. Consequently, if the local time in Gujarat is 6:00 AM, the approximate local time in Arunachal Pradesh is 8:00 AM.

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9. (A) I, II and IV
India shares its longest land boundary with Bangladesh and its shortest with Afghanistan. The total length of the coastline, including island territories like Andaman and Nicobar and Lakshadweep, is 7,516.6 kilometers. However, Sri Lanka is separated from India by the Palk Strait and the Gulf of Mannar, not the Gulf of Khambhat, which is located near the Gujarat coast.

10. (D) Telangana is a coastal state bordered by the Bay of Bengal.
India currently consists of 28 States and 8 Union Territories. Significant recent changes include the reorganization of Jammu and Kashmir and the merger of Dadra and Nagar Haveli with Daman and Diu. Telangana was formed as a landlocked state in 2014 and does not border the Bay of Bengal. All other coastal states are situated along the eastern or western shores.

11. (A) II, I, IV, III
The western coast of India features several states arranged from north to south. Gujarat is the northernmost state on this coast, followed by Maharashtra. Karnataka lies further south, and Kerala is situated at the southern tip of the western coastline. This geographical sequence is essential for understanding the distribution of ports and coastal ecosystems along the Arabian Sea shoreline.

12. (B) Maritime zone extending 24 nautical miles from the baseline for customs, fiscal, and immigration control.
The contiguous zone is a maritime area extending up to 24 nautical miles from a coastal state's baseline. In this region, the state exercises limited control to prevent and punish infringements of its customs, fiscal, immigration, or sanitary laws. It acts as an intermediary buffer between the territorial sea and the exclusive economic zone for specific law enforcement purposes.

13. (A) Both A and R are true and R is the correct explanation of A.
India's peninsular shape provides a long coastline along the Arabian Sea and the Bay of Bengal. This geographic feature enhances its geopolitical significance by allowing easy access to vital maritime trade routes between Europe, Africa, and East Asia. The central location in the Indian Ocean ensures that India remains a key player in international shipping and maritime security operations.

14. (A) P-III, Q-IV, R-I, S-II
West Bengal shares borders with Bangladesh, Nepal, and Bhutan. Uttarakhand borders Nepal and China. Sikkim is strategically located between Nepal, Bhutan, and China. Arunachal Pradesh shares its international boundaries with Bhutan, China, and Myanmar. These borders are critical for India's regional diplomacy and national defense, highlighting the complex political geography of the northern and eastern Himalayan and plains regions.

15. (C) Eight Degree Channel - Separates Lakshadweep and Maldives
The Eight Degree Channel separates the Indian island of Minicoy in Lakshadweep from the Maldives. The Nine Degree Channel separates Minicoy from the main Lakshadweep islands. The Ten Degree Channel divides the Andaman and Nicobar island groups in the Bay of Bengal. The Palk Strait separates India from Sri Lanka. These channels are significant for maritime navigation and territorial demarcation.

16. (C) II and IV
The Northern Mountains act as a climate divide, while the Northern Plains are fertile and densely populated. The Indian Desert lies west of the Aravallis. However, the Peninsular Plateau is an ancient landmass of igneous and metamorphic rocks, not recent alluvium. Additionally, the Eastern Coastal Plains are generally broader than the Western Coastal Plains due to large river deltas.

17. (C) It predominantly consists of marine fossiliferous sedimentary rocks of the Tethys sea.
The Trans-Himalayan region lies to the north of the Greater Himalayas and is distinct in its geological composition. It primarily consists of marine fossiliferous sedimentary rocks from the ancient Tethys Sea. This area includes ranges like the Karakoram and Ladakh. Unlike the Greater Himalayas, which house the highest peaks like Everest, the Trans-Himalayas represent an older, high-altitude arid plateau.

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18. (B) The Western Ghats have a higher average elevation than the Eastern Ghats.
The Western Ghats form a continuous range with a higher average elevation, reaching up to 2,695 meters at Anaimudi. In contrast, the Eastern Ghats are highly fragmented and discontinuous, having been eroded by major east-flowing rivers. Most large peninsular rivers like the Godavari and Krishna originate in the Western Ghats and flow across the plateau to the eastern coast.

19. (D) A narrow belt of highly porous pebbles and gravel lying parallel to the Shiwalik foothills.
The Bhabar is a narrow belt, roughly 8 to 16 kilometers wide, consisting of pebbles and gravel deposited by rivers descending from the mountains. It lies parallel to the Shiwalik foothills. Due to the high porosity of these deposits, many small streams disappear underground in this zone, only to re-emerge further south in the marshy Terai region.

20. (B) 15,200 km
India's total land boundary stretches approximately 15,200 kilometers across various terrains and international borders. This extensive boundary is shared with seven neighboring countries: Pakistan, Afghanistan, China, Nepal, Bhutan, Myanmar, and Bangladesh. Managing this long frontier is essential for national security, trade regulation, and maintaining diplomatic relations within the South Asian region and beyond the Himalayan mountain ranges.

21. (C) Greater Himalayas
The Greater Himalayas, the northernmost and highest range of the Himalayan system, are also known as the Himadri. This range is characterized by its permanent snow cover and contains several of the world's highest peaks, including Mount Everest and Kangchenjunga. It consists of core granitic rocks and serves as a significant geographical and climatic barrier for the Indian subcontinent.

22. (A) Both A and R are true and R is the correct explanation of A.
The Shiwalik range, the southernmost layer of the Himalayas, consists of unconsolidated sediments like sand, gravel, and conglomerate deposited by rivers. Its relatively young geological age and loose composition make it highly susceptible to landslides and soil erosion, especially during periods of heavy monsoon rainfall. The steep slopes and tectonic activity in this region further exacerbate these environmental hazards.

23. (A) P-II, Q-III, R-IV, S-I
The Karakoram range contains K2, the world's second-highest peak. The Ladakh range lies between the Karakoram and Zaskar ranges. The Zaskar range is situated south of the Ladakh range. The Kailash range is an extension of the Trans-Himalayan system located in Tibet. These ranges are characterized by high altitudes, arid conditions, and significant importance in regional physical geography.

24. (B) K2 (Godwin Austen) - Himachal Pradesh
Mount Everest is located in Nepal, while Kangchenjunga is on the India-Nepal border in Sikkim. Nanda Devi is a prominent peak in Uttarakhand. However, K2, also known as Godwin Austen, is located in the Karakoram range in the Gilgit-Baltistan region, not Himachal Pradesh. It is the second-highest mountain in the world and remains a significant geographical landmark.

25. (A) I and II
The Lesser Himalayas, or Himachal range, consist of highly compressed and altered rocks, forming rugged mountain terrain. This region is famous for its picturesque hill stations, including Shimla, Mussoorie, and Nainital, which attract numerous tourists. While high, the average altitude of this range typically falls between 3,700 and 4,500 meters, which is lower than the 6,000-meter average of Himadri.

26. (D) The snowline is at a lower altitude in the Eastern Himalayas compared to the Western Himalayas.
The snowline in the Eastern Himalayas is found at a lower altitude compared to the Western Himalayas due to higher precipitation and proximity to the sea. The Eastern Himalayas receive more rainfall and host dense tropical forests with high biodiversity. Conversely, the Western Himalayas are broader and have a more gradual rise from the plains compared to the eastern section.

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27. (A) Karakoram, Ladakh, Zaskar, Pir Panjal
Moving from north to south across the Himalayan system, the Karakoram is the northernmost range. It is followed by the Ladakh range and then the Zaskar range. The Pir Panjal range lies further south within the Lesser Himalayas. This structural sequence is fundamental to understanding the topographic layout and drainage patterns of the high-altitude regions of northern India.

28. (B) It prevents moisture-laden southwest monsoon winds from escaping, causing significant rainfall.
The Himalayas act as a massive physical barrier that intercepts moisture-laden southwest monsoon winds. By forcing these winds to rise, the mountains cause heavy rainfall across northern India, which is essential for agriculture. Additionally, the perennial rivers originating from Himalayan glaciers provide a constant water supply for irrigation in the fertile Indo-Gangetic plains throughout the entire year.

29. (A) I, II and III
Nathu La is a vital pass connecting Sikkim with Tibet, while Rohtang Pass is a major high-altitude gateway in Himachal Pradesh. Banihal Pass is crucial for providing year-round road access to the Kashmir Valley. However, Shipki La is located in Himachal Pradesh and connects the state with Tibet, rather than connecting Uttarakhand with the nation of Nepal.

30. (A) The soil found predominantly in these plains is black cotton soil.
The Northern Plains were formed by the alluvial deposits of the Indus, Ganga, and Brahmaputra river systems, covering roughly 7 lakh square kilometers. They are highly productive and densely populated. However, the predominant soil in these plains is fertile alluvium, not black cotton soil. Black soil is characteristic of the volcanic Deccan Plateau region in peninsular India.

31. (A) II, III, IV, I
The Northern Plains are divided into distinct zones based on relief. From the foothills of the Shiwaliks moving south, the sequence starts with the pebbly Bhabar belt, followed by the marshy Terai region. Further south lies the Bhangar, consisting of older alluvium, and finally the Khadar, which is the newest alluvium deposited annually on the floodplains.

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32. (D) A marshy, damp, and thickly forested tract south of the Bhabar belt where streams re-emerge.
The Terai is a marshy, damp, and thickly forested zone located immediately south of the Bhabar belt. In this region, the streams and rivers that disappeared underground in the porous Bhabar gravel re-emerge at the surface. Historically, this area was covered with dense vegetation and diverse wildlife, though much of it has now been cleared for agricultural purposes.

33. (A) Both A and R are true and R is the correct explanation of A.
Khadar soils are the new alluvial deposits found in the floodplains of rivers. These soils are extremely fertile because they are replenished almost every year by the deposition of fresh silt and minerals during the annual monsoon floods. This continuous renewal makes the Khadar regions highly suitable for intensive agriculture and supports high crop yields across the northern plains.

34. (A) P-III, Q-I, R-II, S-IV
Jelep La is located in Sikkim, providing a route to Tibet. Bomdi La is situated in Arunachal Pradesh. Niti Pass is a significant mountain pass in Uttarakhand. Zoji La is a critical high-altitude pass in Ladakh that connects Srinagar with Leh. These passes are essential for regional connectivity, trade, and strategic movement across the rugged and high Himalayan terrain.

35. (D) Malwa Plateau - Bound by the Aravalli range in the west
The Malwa Plateau is bound by the Aravalli range to the west and the Vindhyan range to the south. The Central Highlands generally lie north of the Narmada River, while the Deccan Plateau is situated to its south. Contrary to common misconceptions, the Chota Nagpur Plateau is exceptionally rich in mineral resources, including coal, iron ore, and manganese.

36. (B) I, II, IV and V
The Thar Desert lies west of the Aravalli Hills and features undulating sandy plains with dunes like

Barchans. Luni is the only significant river in this arid region. However, the desert receives very low annual rainfall, typically below 150 millimeters, rather than 1500 millimeters. This extreme aridity defines the region's sparse vegetation and unique desert adaptations.

37. (C) It consists of older alluvium lying above the flood levels of rivers, containing 'Kankar'.
The Bhangar represents the older alluvium of the Northern Plains, forming a terrace-like feature above the current flood levels of rivers. It is less fertile than Khadar and often contains calcareous deposits known locally as 'Kankar'. This region is widespread across the plains and provides a stable landform for settlements and traditional farming practices away from active flood zones.

38. (A) The Deccan Plateau is characterized by its volcanic origin and black soil.
The Deccan Plateau is a triangular landmass of volcanic origin, characterized by extensive basaltic rock formations and fertile black soil. It generally slopes from west to east, directing major rivers toward the Bay of Bengal. In contrast, the Central Highlands lie to the north and are drained by rivers flowing towards the Yamuna and Ganga systems.

39. (D) A triangular tract of sediment deposited at the mouth of a river, typically found along the Eastern Coast.
A delta is a triangular landform created by the deposition of sediment carried by a river as the flow leaves its mouth and enters slower-moving or standing water. Along India's eastern coast, major rivers like the Ganga, Mahanadi, Godavari, Krishna, and Cauvery have formed extensive deltas. These regions are highly fertile and significant for the country's agricultural productivity.

40. (B) Anaimudi
Anaimudi is the highest peak in Peninsular India, reaching an elevation of approximately 2,695 meters. It is located in the Anaimalai Hills of the Western Ghats within the state of Kerala. Doddabetta is the highest peak in the Nilgiris, while Mahendragiri is a prominent peak in the Eastern Ghats. Anaimudi is often called the "Everest of South India."

41. (C) It is broad, flat, and formed by the deltas of major east-flowing rivers.
The Eastern Coastal Plain is significantly broader and flatter than the Western Coastal Plain. It is formed by the extensive deltas of major east-flowing rivers such as the Mahanadi, Godavari, Krishna, and Cauvery. While the Western Coastal Plain is narrow and features estuaries and lagoons, the Eastern Coast is characterized by fertile alluvial plains and wide sandy beaches.

42. (A) Both A and R are true and R is the correct explanation of A.
Rivers originating in the Western Ghats and flowing into the Arabian Sea, such as the Narmada and Tapti, do not form deltas. Instead, they create estuaries because they have a short course and flow over a very steep gradient with high velocity. This prevents the significant accumulation of sediment at their mouths, which is required for delta formation.

43. (A) P-III, Q-IV, R-I, S-II
The northern part of the Western Coastal Plain is known as the Konkan Coast, while the southern part is the Malabar Coast. On the eastern side, the northern stretch is referred to as the Northern Circars, and the southern part, extending to Kanyakumari, is the Coromandel Coast. These regional names reflect the diverse cultural and geographical identities along India's coastline.

44. (B) Shevaroy Hills - Karnataka
The Nallamala Hills and Palkonda Range are located in Andhra Pradesh, while the Javadi Hills are in Tamil Nadu. The Shevaroy Hills are also located in Tamil Nadu, near Salem, and not in Karnataka. These hill ranges are part of the discontinuous Eastern Ghats, which have been dissected by the eastward flow of several major peninsular river systems.

45. (B) III only
The Coromandel Coast extends along the eastern shore from the Krishna delta to Kanyakumari and is known for its sandy beaches. However, it does not receive maximum rainfall during the South-West monsoon, as it lies in a rain-shadow area. Instead, it gets the bulk of its precipitation from the North-East monsoon and cyclonic disturbances during the winter months.

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46. (A) The Ten Degree Channel separates the Andaman group from the Nicobar group.
The Ten Degree Channel is a maritime passage that separates the Andaman Islands from the Nicobar Islands in the Bay of Bengal. While the Andaman and Nicobar Islands are of volcanic origin, the Lakshadweep Islands in the Arabian Sea are of coral origin. Port Blair, the capital of the Union Territory, is located on South Andaman Island, not in the Nicobars.

47. (A) Thal Ghat, Bhor Ghat, Palghat, Shencottah Gap
The Western Ghats are pierced by several important passes that facilitate trans-mountain connectivity. Moving from north to south, the Thal Ghat and Bhor Ghat are located in Maharashtra. The Palghat Gap is a major break situated between the Nilgiris and Anamalai hills. The Shencottah Gap is located further south, providing a vital link between the states of Tamil Nadu and Kerala.

48. (D) The presence of black soil, formed by basaltic lava, is ideal for cotton cultivation.
The Deccan Plateau is characterized by widespread black soil, also known as regur soil, which originated from volcanic basaltic lava. This soil is highly retentive of moisture and rich in nutrients, making it exceptionally well-suited for cotton cultivation. This geological feature has made the region a major hub for India's textile industry and contributes significantly to the national agricultural economy.

49. (A) I, II and III
The Western Ghats run parallel to the western coast as a continuous wall, with their elevation generally increasing from north to south. They intercept moisture-laden winds, causing heavy orographic rainfall. While many large rivers flowing to the east originate here, they drain into the Bay of Bengal, not the Arabian Sea, due to the plateau's overall eastward-sloping topography.

50. (B) Its longitudinal extent is strictly confined to the western hemisphere.
Tamil Nadu is situated at the southern tip of the Indian Peninsula, between approximately 8°4'N and 13°35'N latitude. It is bounded by the Bay of Bengal to the east and the Arabian Sea and Indian Ocean to the south and west. Crucially, its longitudinal extent is entirely within the Eastern Hemisphere, making the claim about the Western Hemisphere incorrect.

51. (A) II, IV, I, III
In Tamil Nadu, the prominent hill ranges of the Western Ghats are arranged sequentially. The Nilgiri Hills are the northernmost, followed by the Anamalai Hills. The Palani Hills extend eastward from the main range, and the Cardamom Hills are situated further south towards the state's border. This geographic arrangement influences local climate, biodiversity distribution, and the state's plantation economy.

52. (A) An extensive group of closely scattered islands, such as the Andaman and Nicobar group.
An archipelago is a geographical feature consisting of a cluster or collection of islands scattered across a body of water. India possesses two major archipelagos: the Andaman and Nicobar Islands in the Bay of Bengal and the Lakshadweep Islands in the Arabian Sea. These island groups are significant for their unique ecosystems, strategic maritime locations, and diverse indigenous cultural heritage.

53. (A) Both A and R are true and R is the correct explanation of A.
The Nilgiris, or Blue Mountains, serve as the crucial mountainous node where the Western Ghats and the Eastern Ghats meet. This junction is significant because the continuous wall of the Western Ghats converges with the fragmented and eroded ranges of the Eastern Ghats. This unique geomorphological intersection creates a high-altitude region known for its rich biodiversity and distinct climatic patterns.

54. (A) P-III, Q-IV, R-II, S-I
Tamil Nadu shares its northern boundary with the state of Andhra Pradesh. To the west, it is bordered by Kerala and the Western Ghats. The southern boundary is defined by the Indian Ocean, while the eastern side is flanked by the Bay of Bengal. These natural and political boundaries define the state's territory and its strategic position in the Indian peninsula.

55. (D) Vembadi Shola - Palani Hills
Doddabetta is the highest peak in the Nilgiri Hills, while Anaimudi is located in the Anamalai Hills.

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Agasthiyar Malai is situated in the southernmost part of the Western Ghats, not the Javadi Hills of the Eastern Ghats. Vembadi Shola is correctly identified as a prominent peak within the Palani Hills, which is an eastward extension of the Western Ghats.

56. (B) II and IV
Tamil Nadu's physiography includes the Western and Eastern Ghats, plateaus, and plains. However, the Western Ghats are not completely continuous, as they are pierced by passes like the Palghat Gap. Furthermore, the Eastern Ghats are highly discontinuous and fragmented due to river erosion, rather than being a continuous folded range. The Cauvery delta remains a major feature of the eastern plains.

57. (C) It hosts the first Marine Biosphere Reserve in South and South-East Asia.
The Gulf of Mannar, located between India and Sri Lanka, is a shallow bay known for its extraordinary marine biodiversity. It hosts the first Marine Biosphere Reserve in South and South-East Asia, encompassing 21 islands. The area is famous for its coral reefs, sea-grass beds, and endangered species like the Dugong, playing a critical role in maritime conservation and fisheries.

58. (D) Andaman and Nicobar are in the Bay of Bengal, whereas Lakshadweep is in the Arabian Sea.
The Andaman and Nicobar Islands are located in the Bay of Bengal and have a volcanic origin, being part of a submerged mountain chain. In contrast, the Lakshadweep Islands are situated in the Arabian Sea and are of coral origin. While both archipelagos are inhabited and part of India, they differ significantly in their geological formation, size, and geographic location.

59. (A) Between mainland India and the nation of Sri Lanka.
The Palk Strait is a narrow body of water located between the southeastern coast of India and the northern part of the island nation of Sri Lanka. It connects the Bay of Bengal in the northeast with Palk Bay in the southwest. This strait is culturally and historically significant and serves as a vital maritime boundary between the two South Asian neighbors.

60. (B) The coastline of Tamil Nadu is 1,076 km, making it the second longest in mainland India.
Tamil Nadu possesses a coastline of 1,076 kilometers, which is the second longest in mainland India after Gujarat. It is bordered by the Bay of Bengal to the east and the Indian Ocean to the south. The coastline features diverse ecosystems, including sandy beaches and mangrove forests, and plays a vital role in the state's maritime trade and fishing economy.

61. (B) Charnockite and Archaean gneiss.
The geology of Tamil Nadu is dominated by ancient crystalline rocks, particularly Archaean gneiss and charnockite. These formations constitute the oldest basement rocks of the Indian peninsula and cover a significant portion of the state's territory. They are economically important for the construction industry and provide the foundational structure for the state's diverse mountain and plateau landforms.

62. (A) Both A and R are true and R is the correct explanation of A.
The Eastern Ghats in Tamil Nadu are highly irregular and discontinuous. This fragmentation is primarily due to the extensive erosion and dissection caused by major rivers like the Palar, Pennaiyar, Cauvery, and Vaigai, which flow eastward across the range to reach the Bay of Bengal. Consequently, the Eastern Ghats appear as a series of isolated hill ranges rather than a continuous chain.

63. (A) P-III, Q-IV, R-I, S-II
Ooty, or Udhagamandalam, is the most famous hill station in the Nilgiri Hills. Kodaikanal is situated in the Palani Hills. Yercaud is a prominent hill station located in the Shevaroy Hills of the Eastern Ghats. Yelagiri is found in the Javadi Hills. These destinations are renowned for their cool climates, scenic beauty, and significant contribution to the state's tourism industry.

64. (D) Thamirabarani - Central plains around Salem
The Cauvery river forms its extensive delta in Thanjavur and Nagapattinam. The Palar drains the northern plains, and the Vaigai is central to the southern plains around Madurai. However, the Thamirabarani is a perennial river that flows through the southernmost districts of Tirunelveli and Thoothukudi, rather than the central plains

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around Salem, which are drained by other systems.

65. (B) I and III
Doddabetta is the highest peak in the Nilgiri Hills, standing at 2,637 meters. Anaimudi, the highest peak in South India, is located on the border and shared between Tamil Nadu and Kerala. Mukkuruthi is another prominent peak in the Nilgiris, not the Palani Hills. These peaks are essential for understanding the high-altitude topography and environmental zones of the Western Ghats.

66. (B) It is known as the 'Granary of South India' due to extensive alluvial deposits.
The Cauvery delta is a fertile alluvial plain in eastern Tamil Nadu formed by the deposition of river sediments. Due to its high agricultural productivity, especially in rice cultivation, it is widely referred to as the 'Granary of South India.' The region is characterized by an extensive network of canals and has been a center of civilization and agriculture for centuries.

67. (A) Palar, Pennaiyar, Cauvery, Vaigai, Thamirabarani
The major rivers of Tamil Nadu follow a specific geographical sequence from north to south. The Palar is the northernmost, followed by the Pennaiyar. The Cauvery, with its large delta, occupies the central position. Further south is the Vaigai river, and the Thamirabarani is the southernmost major river. This drainage pattern is determined by the state's overall southeast-sloping topographic relief.

68. (A) By conserving rare marine biodiversity such as coral reefs and Dugong (sea cow).
The Gulf of Mannar Biosphere Reserve is vital for conserving unique marine biodiversity, including coral reefs, sea-grass beds, and mangroves. It provides a protected habitat for endangered species such as the Dugong, also known as the sea cow. By preserving these ecosystems, the reserve supports the ecological balance of the region and ensures the sustainability of local marine fisheries and resources.

69. (A) I and III
The Palk Strait connects the Bay of Bengal with Palk Bay. Adam's Bridge, a chain of limestone shoals, acts as a geographical boundary separating Palk Bay from the Gulf of Mannar to the south. However, the strait is quite shallow and contains numerous shoals, which prevent large ocean liners from navigating through it, necessitating careful maritime route planning for deep vessels.

70. (A) It is a continuous, elevated mountain range formed by tectonic uplift.
Adam's Bridge, or Rama Setu, is a chain of limestone shoals extending between Dhanushkodi in India and Talaimannar in Sri Lanka. It separates the Gulf of Mannar from Palk Bay. However, it is not a continuous, elevated mountain range formed by tectonic uplift; rather, it consists of shallow sandbars and rocks that have significant historical, cultural, and geological interest in the region.

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71. (A) III, II, IV, I
The discontinuous ranges of the Eastern Ghats in Tamil Nadu are situated in a specific north-south order. The Javadi Hills are the northernmost, followed by the Shevaroy Hills near Salem. Further south lie the Kolli Hills, and the Pachaimalai Hills are situated towards the southern end of this fragmented system. These hills are known for their distinct ecosystems and local mineral deposits.

72. (B) An area recognized for conserving genetic diversity and promoting sustainable development.
A biosphere reserve is an area recognized under UNESCO's Man and the Biosphere Programme for its role in conserving genetic diversity and ecosystems. It aims to harmonize the conservation of biological and cultural diversity with economic and social development. In the Gulf of Mannar, this designation ensures the protection of rare marine species while promoting sustainable livelihoods for local coastal communities.

73. (A) Both A and R are true and R is the correct explanation of A.
The Gulf of Mannar is highly significant for Tamil Nadu's marine fisheries because its diverse ecosystems, such as coral reefs and sea-grass beds, serve as essential breeding and feeding grounds for many fish species. These habitats support a rich variety of marine life, ensuring high biological productivity. Consequently, the region

is a vital resource for the economic sustenance of thousands of fishers.

74. (A) P-I, Q-II, R-III, S-IV
Doddabetta is the tallest peak in the Nilgiris at 2,637 meters. Mukkuruthi follows at 2,554 meters. Vembadi Shola in the Palani Hills reaches approximately 2,505 meters, while Perumal Peak stands at about 2,234 meters. These heights illustrate the significant vertical relief found within the state's mountain systems, contributing to its diverse climatic zones and unique high-altitude montane forest ecosystems.

75. (A) Taluks - Lowest level of rural self-governance equivalent to a village panchayat
Tamil Nadu's administration includes 38 districts, with revenue divisions acting as intermediate layers. While taluks are essential administrative units, the lowest level of rural self-governance is the Village Panchayat, not the taluk. Taluks are primarily used for revenue administration and are further subdivided into firkas and revenue villages. Chennai serves as both a major metropolitan center and a distinct administrative district.

76. (B) I, IV and V
The Cauvery originates in Karnataka's Brahmagiri hills and is a major river for Tamil Nadu. The Thamirabarani is the state's only perennial river, originating in the Agasthiyar hills. The Pennaiyar flows eastward to the Bay of Bengal. However, the Palar drains northern districts, and the Vaigai, while often dry in its lower reaches, does reach the sea during good monsoons.

77. (B) It is in Namakkal district and has a well-preserved evergreen forest.
The Kolli Hills are a small mountain range located in the Namakkal district of Tamil Nadu. A distinguishing feature of these hills is their well-preserved evergreen forest cover, despite being part of the generally drier Eastern Ghats. They are also famous for their seventy hairpin bends and cultural significance, housing ancient temples and supporting diverse medicinal plant species within their rugged terrain.

78. (A) Anaimudi is the highest in South India; Doddabetta is the highest in the Nilgiris.
Anaimudi is the highest peak in South India and the Western Ghats, located in Kerala. Doddabetta is the highest peak specifically within the Nilgiri Hills of Tamil Nadu. While both are part of the larger Western Ghats system, Anaimudi's absolute altitude is greater than that of Doddabetta. These peaks are critical for regional geography, representing the highest points of their respective ranges.

79. (C) Shallow waters prevent large ships from passing, forcing circumnavigation of Sri Lanka.
Adam's Bridge consists of a series of shallow limestone shoals and sandbars between India and Sri Lanka. These shallow waters prevent the passage of large cargo ships and deep-draft vessels through the Palk Strait. As a result, major international maritime traffic must circumnavigate the island of Sri Lanka, adding significant time and distance to sea voyages between the western and eastern coasts.

80. (D) Yercaud is referred to as the 'Poor man's Ooty' and is in the Shevaroy Hills.
Yercaud is a popular hill station in the Shevaroy Hills of the Eastern Ghats and is often called the 'Poor man's Ooty.' In contrast, Kodaikanal is located in the Palani Hills, not the Nilgiris. Ooty itself is situated in the Nilgiri Hills. Yelagiri is a hill station in the Eastern Ghats, far from the coastline, making it an inland destination.

81. (C) Taluk
In the administrative hierarchy of Tamil Nadu, the state is divided into districts. Each district is subdivided into revenue divisions for better management. Immediately below the revenue division is the Taluk, which is headed by a Tahsildar. Taluks are further divided into firkas, which finally consist of individual revenue villages. This structured system ensures efficient governance and revenue collection across the state.

82. (A) Both A and R are true and R is the correct explanation of A.
Kanyakumari is geographically and culturally unique as it represents the southernmost tip of the Indian mainland. Its significance is heightened by its location at the confluence of three major

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water bodies: the Arabian Sea, the Bay of Bengal, and the Indian Ocean. This geographic meeting point creates a distinct landscape and has made the town a major site for pilgrimage and tourism.

83. (A) P-III, Q-I, R-IV, S-II
Chennai and Tiruvallur are key districts in the Northern Zone. Coimbatore and Tiruppur represent the industrialized Western Zone. Tiruchirappalli and Thanjavur are central to the fertile agricultural belt of the Central Zone. Madurai and Tirunelveli are prominent districts in the Southern Zone. These classifications help in understanding the regional economic and geographical variations across the diverse landscape of Tamil Nadu.

84. (A) Charnockite - Predominantly found in the Nilgiris and Chennai region
Charnockite is a prominent type of ancient metamorphic rock found extensively in the Nilgiri Hills and the Chennai region. While other rock types like Gondwana sediments and marine deposits exist in specific pockets like Ariyalur and Cuddalore, they are not uniform across the state. Deccan Traps are largely absent in Tamil Nadu, being characteristic of the northwestern part of the peninsular plateau.

85. (B) I and III
Tamil Nadu is divided into districts to facilitate administration. Within these districts, multiple Taluks are grouped together to form Revenue Divisions, serving as an intermediate administrative layer. The claim that districts are divided directly into Village Panchayats is incorrect, as several layers, including Revenue Divisions, Taluks, and Firkas, exist to manage revenue and local governance effectively across the state's territory.

86. (A) They form the oldest crystalline basement rocks, covering over two-thirds of the state.
Archaean rock formations, including gneiss and charnockite, constitute the oldest crystalline basement of the Indian peninsula. In Tamil Nadu, these ancient rocks cover more than two-thirds of the state's total area. They are characterized by their hard, crystalline nature and form the core of the state's mountain ranges and plateaus, distinguishing them from more recent sedimentary deposits found in coastal regions.

87. (B) District, Revenue Division, Taluk, Firka, Revenue Village
The administrative structure of Tamil Nadu follows a clear hierarchy for effective governance. The highest unit is the District, which is divided into Revenue Divisions. Each Revenue Division comprises several Taluks. Taluks are further subdivided into Firkas, and the most basic unit of administration is the Revenue Village. This systematic organization supports revenue collection, law enforcement, and the implementation of development programs.

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88. (B) They are used as construction materials, dimension stones, and in monument building.
The abundance of hard crystalline rocks like granite and charnockite in Tamil Nadu provides a significant economic resource. These materials are extensively quarried for use as construction aggregates, dimension stones for flooring, and in the creation of monuments. The state is a major exporter of high-quality granite, supporting a large-scale industry that contributes to infrastructure development and earns substantial foreign exchange.

89. (B) I, II and IV
The Western Zone is known for its textile industry, and the Central Zone features the fertile Cauvery delta. The Northern Zone includes Chennai, a major industrial and automobile hub. However, the claim that the Southern Zone receives the maximum annual rainfall is incorrect; the highest rainfall typically occurs in the coastal and mountainous regions of the north and west during the monsoons.

90. (D) Chennai is completely landlocked.
Kanyakumari is located at the meeting point of the Arabian Sea and the Bay of Bengal. Nagapattinam is a coastal district heavily impacted by the 2004 tsunami, and Ramanathapuram borders the Gulf of Mannar. However, Chennai is not landlocked; it is a major port city situated directly on the coast of the Bay of Bengal, serving as a vital maritime gateway.

91. (A) III, II, I, IV
Along the eastern coast of Tamil Nadu, the districts are arranged sequentially from north to south. Tiruvallur is the northernmost coastal district, followed by the capital city, Chennai. Chengalpattu lies immediately south of Chennai, and Villupuram is situated further down the coast. This sequence is important for understanding the geography of the northern Coromandel Coast and its various industrial and urban centers.

92. (B) Tiruchirappalli, Thanjavur, Tiruvarur
The Central Geographical Zone of Tamil Nadu is primarily defined by the Cauvery river basin and its delta. It includes the districts of Tiruchirappalli, Thanjavur, and Tiruvarur, which are known for their rich alluvial soil and high agricultural productivity. This region is historically significant and serves as the cultural and agricultural heartland of the state, often referred to as the delta region.

93. (A) Both A and R are true and R is the correct explanation of A.
Charnockite rocks are frequently exposed in the Eastern Ghats of Tamil Nadu. This occurs because the region has undergone significant tectonic uplift and subsequent deep erosion over geological time. As the overlying materials were stripped away, these ancient, deep-seated metamorphic rocks were brought to the surface. Their presence provides valuable insights into the geological history and structural evolution of the Indian peninsular shield.

94. (A) P-I, Q-II, R-III, S-IV
Archaean Gneiss forms the oldest crystalline basement of Tamil Nadu. Cretaceous sedimentary rocks in Ariyalur are famous for their fossils. Tertiary sandstones are prominently found in the Cuddalore region, and Quaternary alluvium consists of the most recent deposits along major river valleys and the coastline. This geological diversity reflects the complex history of landform development and sedimentation across the state's territory.

95. (C) Salem - Northern Zone
Coimbatore is centrally located within the Western Zone, and Madurai is a major hub of the Southern Zone. Thanjavur is the heart of the agricultural Central Zone. However, Salem is generally classified as part of the Western or Central-Western region rather than the Northern Zone, which typically includes districts like Chennai, Tiruvallur, Kanchipuram, and Vellore.

96. (A) I, III, IV and V
Tamil Nadu is bordered by Kerala and Karnataka and features coastal plains formed by rivers like the Cauvery. The Eastern and Western Ghats meet at the Nilgiris, and red soil is the most widespread soil type. However, the Western Ghats are not an unbroken wall; they have passes like the Palghat Gap that allow some monsoon winds to enter the state.

97. (C) It contains 21 islands providing habitat to endangered species like the sea cow.
The Gulf of Mannar Biosphere Reserve is unique for encompassing 21 islands and diverse marine habitats such as coral reefs and mangroves. It is globally recognized for protecting endangered species like the Dugong, or sea cow, which is a rare marine mammal. This reserve is the first of its kind in India and plays a crucial role in international marine biodiversity conservation and research.

98. (B) Central Zone has deltaic plains; Western Zone has plateaus and the Western Ghats.
Geographically, the Western Zone of Tamil Nadu is characterized by high plateaus and the mountain ranges of the Western Ghats. In contrast, the Central Zone is dominated by the flat deltaic plains formed by the Cauvery river and its tributaries. While the Western Zone is a major industrial hub, the Central Zone remains the primary agricultural region due to its fertile alluvium.

99. (D) The Cauvery delta is much more extensive and productive than the Vaigai delta.
The Cauvery river basin is much larger and more significant than the Vaigai basin. The Cauvery delta is exceptionally extensive and productive, earning it the title of the 'Granary of South India.' While the Vaigai is an important river for the southern districts, its discharge and deltaic area are considerably smaller compared to the vast and fertile system created by the Cauvery.

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100. (A) The Gulf of Mannar is located south of Adam's Bridge, whereas Palk Strait is to the north.
The Gulf of Mannar is located to the south of Adam's Bridge, while the Palk Strait lies to its north. Both are relatively shallow water bodies, which restricts the movement of large, deep-draft vessels. The Gulf of Mannar is renowned for its rich coral reefs and biodiversity, whereas the Palk Strait connects the larger Bay of Bengal with the enclosed Palk Bay.

101. (C) Plantation crops like tea, coffee, and spices.
The high-altitude terrain, cool climate, and well-drained soils of the Nilgiris and Anamalai hills are ideal for plantation agriculture. These regions are predominantly used for the large-scale cultivation of tea, coffee, and various spices like cardamom and pepper. These crops are major contributors to the state's economy and are a hallmark of the agricultural landscape in the Western Ghats.

102. (A) Both A and R are true and R is the correct explanation of A.
Tamil Nadu experiences mild winters without extreme cold because of its proximity to the equator and its long coastline. The surrounding oceans—the Bay of Bengal and the Indian Ocean—exert a moderating influence on the land temperatures, preventing them from dropping significantly. This maritime effect ensures that the state maintains a generally warm and tropical climate throughout the entire year.

103. (A) P-IV, Q-I, R-II, S-III
Tropical evergreen forests are found on the windward slopes of the Western Ghats. Mangroves occur in estuarine areas like Pitchavaram. Shola forests are restricted to the high-altitude valleys of the Nilgiris and Anamalai hills. Tropical deciduous forests are common on the lower, drier slopes of both the Eastern and Western Ghats. These variations are driven by altitude and rainfall patterns.

104. (B) Hogenakkal - Dharmapuri
Hogenakkal Falls is a major tourist attraction located on the Cauvery river in the Dharmapuri district. Courtallam falls are situated in the Tenkasi district, not Coimbatore. Suruli Falls is in Theni district, while Agaya Gangai is in the Kolli Hills of Namakkal district. These waterfalls are important for local tourism and reflect the rugged topography and river systems of the state.

105. (D) I, II and III
Tamil Nadu's climate is characterized by its heavy reliance on the North-East monsoon for the majority of its annual rainfall. The South-West monsoon provides significantly less rain to the eastern parts of the state due to the rain-shadow effect of the Western Ghats. Additionally, the state frequently experiences intense cyclonic storms from October to December, which bring heavy coastal precipitation.

106. (D) It is located near Chidambaram in the Cuddalore district of Tamil Nadu.
Pichavaram is home to one of the largest mangrove forests in India, located near Chidambaram in the Cuddalore district. These mangroves are formed by the backwaters of the Vellar and Coleroon rivers. The trees have specialized root adaptations, such as stilt and breathing roots, to survive in saline, waterlogged soil. It is a vital ecosystem for coastal protection and local biodiversity.

107. (A) Red Soil, Black Soil, Alluvial Soil, Laterite Soil
Red soil is the most dominant soil type in Tamil Nadu, covering more than sixty percent of the state's area. It is followed by black soil, which is prominent in the cotton-growing regions. Alluvial soil is restricted to the river deltas and coastal plains, while laterite soil occupies the smallest area, primarily in high-rainfall hilly zones and certain coastal pockets.

108. (B) It channels southwest monsoon winds into Coimbatore, moderating its climate.
The Palghat Gap is a major break in the Western Ghats that allows moisture-laden southwest monsoon winds to enter the state. This gap significantly influences the climate of neighboring districts like Coimbatore, moderating temperatures and providing moderate rainfall during the summer monsoon. This geographical feature prevents the region from being as dry as other rain-shadow areas further away from the mountains.

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109. (A) I, II and IV
Tamil Nadu possesses significant mineral wealth, including vast lignite reserves in Neyveli and major magnesite deposits in the Salem region. The beach sands of Kanyakumari are rich in ilmenite and rutile. However, the state is not a leading producer of copper ore; India's primary copper reserves are located in states like Rajasthan and Madhya Pradesh. These minerals are vital for regional industrialization.

110. (A) It is a major tributary of the Cauvery river.
The Thamirabarani is the only major perennial river in Tamil Nadu, originating in the Agasthiyar hills of the Western Ghats. It flows through the Tirunelveli and Thoothukudi districts before reaching the Gulf of Mannar. Crucially, it is an independent river system and not a tributary of the Cauvery. Its year-round flow supports agriculture and industry in the southernmost part of the state.

111. (A) I, II, III, IV
The major dams and reservoirs in Tamil Nadu are arranged from north to south according to their river basins. The Mettur Dam on the Cauvery is the northernmost, followed by the Bhavanisagar Dam on the Bhavani river. Further south lies the Vaigai Dam in the Vaigai basin, and the Papanasam Dam on the Thamirabarani is located at the southern end.

112. (D) Stunted tropical montane evergreen forests in high-altitude valleys and grasslands.
Shola forests are a unique type of stunted tropical montane evergreen forest found in the high-altitude valleys and hollows of the Nilgiris, Anamalai, and Palani hills. They typically occur in patches surrounded by vast rolling grasslands. These forests are vital for water conservation, acting as natural sponges that feed perennial streams, and host many endemic species of flora and fauna.

113. (A) Both A and R are true and R is the correct explanation of A.
Ramanathapuram and Thoothukudi are among the driest districts in Tamil Nadu. During the South-West monsoon, they are shielded by the Western Ghats, placing them in a rain-shadow zone. Additionally, their geographic location means they are often bypassed by the primary moisture tracks of the North-East monsoon. This combination of factors leads to very low annual rainfall and an arid environment in these coastal districts.

114. (A) P-II, Q-I, R-IV, S-III
Coimbatore is known as the 'Manchester of South India' due to its massive textile industry. Tiruppur is the knitwear capital, dominating garment exports. Sivakasi is the national center for matchboxes and fireworks. Karur is a major hub for home textiles and bus body building. These identities highlight the diverse and specialized industrial landscape that drives the economy of various Tamil Nadu districts.

115. (D) Mudumalai Wildlife Sanctuary - Nilgiris district
Mudumalai Wildlife Sanctuary and National Park is located in the Nilgiris district and is part of the first biosphere reserve in India. Point Calimere is in Nagapattinam, not Kanyakumari. Mundanthurai Tiger Reserve is in Tirunelveli, and Vedanthangal Bird Sanctuary is situated in Chengalpattu district. These protected areas are essential for conserving the state's diverse wildlife and natural forest ecosystems.

116. (A) I, III and IV
Tamil Nadu's coastline features Marina Beach, the world's second longest urban beach, and extensive salt swamps in Vedaranyam. Coral reefs are prominent around the islands of the Gulf of Mannar. However, while deltas are common, estuaries are less dominant compared to the west coast. Furthermore, the coast is highly vulnerable to cyclonic disturbances during the North-East monsoon, making the claim of immunity incorrect.

117. (C) It predominantly drains Vellore and Kanchipuram before entering the Bay of Bengal.
The Palar is an important river that predominantly drains the northern districts of Tamil Nadu, including Vellore, Ranipet, and Kanchipuram, before emptying into the Bay of Bengal. Unlike the Cauvery, it does not form a massive delta. Its flow is seasonal and highly dependent on monsoon rainfall, making it non-perennial, with significant water carried only during heavy rain events.

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118. (A) Chennai is humid and monsoon-fed; Coimbatore is milder due to the Palghat gap.
Chennai has a hot and humid tropical maritime climate, receiving most of its rainfall during the North-East monsoon. In contrast, Coimbatore enjoys a milder climate due to its higher elevation and the cooling influence of winds passing through the Palghat Gap. Both cities are influenced by monsoons, but their local topography and distance from the sea create distinct weather patterns and temperatures.

119. (D) Discontinuous nature allows rivers to pass, depositing fertile alluvium in central plains.
The Eastern Ghats in Tamil Nadu are highly discontinuous and fragmented. This broken structure allows major rivers like the Cauvery and Pennaiyar to pass through the gaps and flow across the central plains. As these rivers traverse the landscape, they deposit fertile alluvium, which has created some of the state's most productive agricultural regions, supporting extensive paddy and sugarcane cultivation.

120. (B) Formed by leaching under high temp and rainfall, found in Kanchipuram and Nilgiris.
Laterite soils are formed through the process of intense leaching under conditions of high temperature and heavy rainfall. In Tamil Nadu, these soils are found in specific areas like the Nilgiris and parts of Kanchipuram and Tiruvallur. They are generally less fertile due to the removal of nutrients and organic matter, making them more suitable for plantation crops like cashew and certain trees.

121. (C) The arid regions of Ramanathapuram have the highest population density in the state.
Population density in Tamil Nadu is closely linked to its physical geography. The fertile Cauvery delta and urban coastal centers like Chennai have high population densities due to agriculture and industry. Mountainous areas like the Nilgiris are more sparsely populated. However, the arid districts like Ramanathapuram typically have lower population densities because of limited water resources and harsher agricultural conditions.

122. (A) Both A and R are true and R is the correct explanation of A.
The East Coast Road, which runs parallel to the Bay of Bengal, is highly vulnerable to coastal erosion. This environmental challenge is caused by rising sea levels and intense storm surges during frequent cyclones. Additionally, human-made structures like ports can disrupt the natural movement of sand along the coast, exacerbating the loss of land and threatening the infrastructure along the Coromandel shoreline.

123. (A) P-II, Q-IV, R-I, S-III
Neyveli in Cuddalore is the primary source of lignite in Tamil Nadu. Bauxite deposits are found in the high-altitude Shevaroy Hills. Salem is renowned for its magnesite reserves, and Ariyalur is a major center for limestone, supporting a large cement industry. This distribution of mineral resources is tied to the state's diverse geological history and provides a foundation for various heavy industries.

124. (B) Adam's Bridge - Pamban Pass
The Western Ghats are known locally as Sahyadri, and the Eastern Ghats are sometimes called Poorvadri. The Palghat Gap is also referred to as the Palakkad Pass. However, Adam's Bridge, or Rama Setu, is a chain of shoals, while the Pamban Pass is the actual navigable channel between the Indian mainland and Pamban Island, making the identification of the two as the same incorrect.

125. (A) I and III
Tamil Nadu is a leader in renewable energy, with Muppandal hosting one of the world's largest concentrations of wind farms. The Kamuthi solar plant in Ramanathapuram is among the largest single-location solar facilities globally. While the state generates hydel power, it comes from both the Western and Eastern Ghats, and the state relies on a diverse mix of thermal, nuclear, and renewable sources.

126. (A) They have self-ploughing capacity and moisture retention, ideal for cotton.
Black soils, or regur soils, are characterized by their high clay content and remarkable moisture-retention capacity. They exhibit a 'self-ploughing' quality because they develop deep cracks when dry, allowing for aeration. These soils are extremely fertile and are ideally suited for the

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cultivation of cotton. In Tamil Nadu, they are found prominently in districts like Coimbatore, Madurai, and Virudhunagar, supporting major textile hubs.

127. (A) Pulicat Lake, Kaliveli Lake, Ousteri Lake, Point Calimere
Along the eastern coast of Tamil Nadu, major wetlands are situated in a clear north-to-south order. Pulicat Lake is the northernmost lagoon on the border with Andhra Pradesh. Moving south, the Kaliveli Lake in Villupuram is followed by the Ousteri Lake near Puducherry. Finally, Point Calimere is located at the southern tip of the Coromandel Coast, serving as a critical habitat for migratory birds.

128. (D) Sheltered coastal location with a natural harbor makes it a port and salt hub.
Thoothukudi is strategically located on the sheltered southeastern coast of Tamil Nadu. Its natural harbor has facilitated its development as a major maritime port and a hub for international trade. The arid climate and coastal proximity also make it the state's leading center for salt production. These geographical advantages have transformed the city into an important industrial and commercial gateway for southern Tamil Nadu.

129. (A) I, II and IV
Tamil Nadu faces various natural hazards due to its geography. The coast is prone to cyclones, and the Nilgiris often experience landslides during heavy rain. Tsunamis also pose a threat to the eastern shoreline. However, the state does not fall in the highest seismic risk zone; most of its territory is classified under Zone II or III, which represent low to moderate risk.

130. (B) The state possesses a massive inland drainage system ending in desert salt lakes.
Most rivers in Tamil Nadu flow from the high Western Ghats in the west toward the Bay of Bengal in the east, following the land's overall slope. These rivers are primarily rain-fed and non-perennial. However, the state does not possess a massive inland drainage system ending in desert salt lakes; such patterns are more characteristic of arid regions in Rajasthan, not the peninsular south.

131. (A) I, II, III, IV
The highest peaks in the Tamil Nadu section of the Western Ghats are arranged by altitude. Doddabetta is the tallest at 2,637 meters, followed by Mukkuruthi at 2,554 meters. Vembadi Shola stands at approximately 2,505 meters, and Perumal Peak is lower at around 2,234 meters. This descending order reflects the varied mountain topography that creates diverse ecological niches and influences local climate across the state's western border.

132. (A) Originates in Varusanadu hills, flows through Madurai, and empties into Palk Bay.
The Vaigai river originates in the Varusanadu hills of the Western Ghats and flows through the historic city of Madurai. It drains the southern plains before emptying into the Palk Bay near Ramanathapuram. It is a non-perennial river, but its basin is agriculturally significant, supporting thousands of hectares of farmland through a network of canals and the Vaigai dam.

133. (A) Both A and R are true and R is the correct explanation of A.
Agriculture in Tamil Nadu is heavily reliant on groundwater extraction because the state has limited surface water resources. Most of the rivers are non-perennial and depend entirely on erratic monsoon rainfall. Since surface water is not available year-round, farmers must tap into aquifers to sustain their crops, leading to widespread use of wells and borewells across most agricultural districts in the state.

134. (A) P-I, Q-II, R-III, S-IV
Alluvial soil is concentrated in the fertile Cauvery delta region. Black soil is prominently found in the semi-arid plains of Coimbatore and Virudhunagar. Laterite soil occurs in high-rainfall zones like the Nilgiris and parts of Kanchipuram. Saline or coastal soils are restricted to the swampy and low-lying coastal areas of Vedaranyam and Ramanathapuram. These soil patterns dictate the state's regional agricultural specialization.

135. (D) Point Calimere Wildlife Sanctuary - Alpine tundra ecosystem
The Nilgiri Biosphere Reserve is known for its Shola forests and grasslands, and the Gulf of Mannar protects coral reefs. Agasthyamalai features tropical wet evergreen forests. However,

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Point Calimere is a wildlife sanctuary and wetland area on the coast, not an alpine tundra ecosystem. Alpine tundra is only found at very high altitudes in the Himalayas, not in the tropical climate of Tamil Nadu.

136. (A) I, II and IV
Tamil Nadu's industrial landscape is shaped by its geology. Limestone in Ariyalur supports cement plants, while magnetite in Salem is used in steel production. Granite quarrying is a major economic activity in many districts. However, the coastal sands are not barren; they contain valuable minerals like ilmenite. Additionally, the state does have petroleum refineries, such as the one located in Manali near Chennai.

137. (C) Brackish water lagoon at the border of Tamil Nadu and Andhra Pradesh.
Pulicat Lake is the second largest brackish water lagoon in India, situated on the border of Tamil Nadu and Andhra Pradesh. It is separated from the Bay of Bengal by the barrier island of Sriharikota. The lake is a significant ecosystem, serving as a vital bird sanctuary and a productive area for fishing, while its brackish nature supports diverse aquatic and avian life.

138. (D) Western Ghats run along the border; Eastern Ghats cut across northern/central districts.
In Tamil Nadu, the Western Ghats form a continuous mountain wall along the western border with Kerala. In contrast, the Eastern Ghats are a series of discontinuous, eroded hill ranges that cut across the northern and central parts of the state. The Western Ghats are taller and receive more rainfall, whereas the Eastern Ghats are lower and have been significantly fragmented by river systems.

139. (A) Cauvery delta relies on canal irrigation; Kongu region depends on well irrigation.
Agricultural patterns in Tamil Nadu vary by region. The Cauvery delta, being a low-lying alluvial plain, relies heavily on an extensive system of canal irrigation for paddy cultivation. Conversely, the Kongu region in the Western Zone, characterized by plateaus and a drier climate, depends primarily on well and borewell irrigation. Both regions are major agricultural contributors but utilize different water management strategies based on their geography.

140. (B) Coromandel is wider with deltas; Malabar is narrower with lagoons and backwaters.
The Coromandel Coast on the eastern shore is generally wider and features large river deltas. The Malabar Coast on the western side is narrower and characterized by the presence of numerous lagoons and backwaters, locally known as 'Kayals.' Additionally, while the Malabar Coast receives heavy rain from the summer monsoon, the Coromandel Coast receives its primary rainfall during the winter monsoon and from cyclones.

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CHAPTER 02
Monsoon Climate and Weather

1. Which of the following best defines the fundamental difference between weather and climate?
(A) Weather refers to short-term atmospheric states, whereas climate refers to long-term averages over large regions
(B) Weather involves long-term patterns, whereas climate is defined as the immediate daily condition
(C) Weather depends on global latitude, whereas climate is influenced by regional maritime factors
(D) Weather describes high altitude events, while climate only measures conditions at the sea level
(E) Answer not known

2. Consider the following statements regarding the factors affecting the climate of India:
I. Temperature generally decreases with increasing altitude at a normal lapse rate.
II. The presence of the Himalayas prevents the cold winds of Central Asia from entering the Indian subcontinent.
III. Areas near the coast experience extreme temperature variations throughout the year.
Which of the statements given above is/are correct?
(A) I and II only
(B) II and III only
(C) I only
(D) I and III only
(E) Answer not known

3. The following question consists of two statements, one labeled as Assertion (A) and the other as Reason (R). Examine these two statements carefully and select the correct answer using the codes given below.
Assertion (A): The climate of coastal regions like Chennai remains highly equable throughout the year.
Reason (R): Coastal areas are strongly influenced by the moderating effect of sea breezes and land breezes.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

4. Match List I with List II and select the correct answer using the codes given below:
List I: (Koppen's Climate Type)
P. Amw
Q. Aw
R. Cwg
S. E
List II: (Region in India)
I. Polar type in Jammu and Kashmir
II. Monsoon type with short dry season in Western Coast
III. Tropical Savanna in Peninsular Plateau
IV. Monsoon type with dry winter in Ganga Plain
(A) P-I, Q-II, R-III, S-IV
(B) P-II, Q-III, R-IV, S-I
(C) P-III, Q-I, R-IV, S-II
(D) P-IV, Q-III, R-I, S-II
(E) Answer not known

5. The word 'Monsoon' is derived from an Arabic word which means:
(A) Wind
(B) Season
(C) Rain
(D) Current
(E) Answer not known

6. Arrange the following states in the chronological sequence of the normal onset of the Southwest Monsoon:
1. Maharashtra
2. Kerala

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3. Gujarat
4. Karnataka

Which of the following represents the correct sequence?
(A) 2, 4, 1, 3
(B) 2, 1, 4, 3
(C) 4, 2, 1, 3
(D) 1, 3, 2, 4
(E) Answer not known

7. Which of the following pairs of climatic factors and their influence on India is correctly matched?
(A) Latitude - India lies entirely in the temperate zone
(B) Relief features - Causes uniform rainfall across the entire subcontinent
(C) Jet streams - Exclusively associated with the Northeast monsoon
(D) Distance from sea - Continental climate in interior regions like Delhi
(E) Answer not known

8. Consider the following statements about the mechanism of the Indian Monsoon:
I. Differential heating and cooling of land and water create low pressure on the landmass of India.
II. The Inter Tropical Convergence Zone (ITCZ) shifts southwards over the Ganga plain in summer.
III. The presence of the high-pressure area east of Madagascar affects the Indian monsoon.
IV. The Tibetan plateau gets intensely heated during summer, resulting in strong vertical air currents.

Which of the statements given above are correct?
(A) I, II and III only
(B) II, III and IV only
(C) I, III and IV only
(D) I and IV only
(E) Answer not known

9. Identify the incorrect statement regarding the El Nino phenomenon:
(A) It involves the periodic warming of sea surface temperatures in the central and eastern equatorial Pacific Ocean
(B) It leads to higher than normal rainfall and frequent floods across the entire Indian subcontinent
(C) It is generally associated with a weakening of the monsoon circulation over India
(D) It influences the global weather patterns and is closely linked with the ENSO cycle
(E) Answer not known

10. The following question consists of two statements, one labeled as Assertion (A) and the other as Reason (R). Examine these two statements carefully and select the correct answer using the codes given below.
Assertion (A): The Western Ghats receive heavy rainfall from the Southwest Monsoon.
Reason (R): The Western Ghats lie parallel to the direction of the Arabian Sea branch of the Southwest Monsoon.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

11. Which of the following is the correct chronological sequence of the withdrawal of the Southwest Monsoon in India?
(A) Northwestern India, Central India, Peninsular India
(B) Peninsular India, Central India, Northwestern India
(C) Central India, Peninsular India, Northwestern India
(D) Northwestern India, Peninsular India, Central India
(E) Answer not known

12. The shifting of the Inter Tropical Convergence Zone (ITCZ) during the summer season over the Indian subcontinent directly leads to:
(A) Subtropical westerly jet stream setup over the Himalayas
(B) Immediate onset of the retreating monsoon across India
(C) Monsoon trough formation attracting moisture-laden winds
(D) Significant drop in temperature over the western desert
(E) Answer not known

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13. Which of the following pairs relating to rainfall distribution in India is incorrectly matched?
(A) High rainfall zone - Western coast and Northeastern India
(B) Low rainfall zone - Deccan plateau and Western Uttar Pradesh
(C) Scanty rainfall zone - Northern parts of Kashmir and Western Rajasthan
(D) Medium rainfall zone - Gujarat and Eastern Rajasthan
(E) Answer not known

14. Consider the following statements regarding the Southwest Monsoon:
I. It is responsible for approximately 75% of India's annual rainfall.
II. The Arabian Sea branch is stronger than the Bay of Bengal branch.
III. It strikes the Kerala coast typically around the first week of June.
IV. The Aravali Range highly enhances its rainfall potential in Rajasthan.
V. It progresses northwards and covers the entire country by mid-July.
Which of the statements given above are correct?
(A) I, II, III and IV only
(B) I, II, III and V only
(C) II, III, IV and V only
(D) I, III and V only
(E) Answer not known

15. Identify the correct statement about the influence of Jet Streams on India's climate:
(A) The westerly jet stream is responsible for bringing the Northeast monsoon winds to Tamil Nadu
(B) The easterly jet stream steers tropical depressions into India during the monsoon season
(C) Jet streams are surface winds that determine the microclimate of the Nilgiris
(D) The easterly jet stream operates exclusively during the winter season
(E) Answer not known

16. Match List I with List II and select the correct answer using the codes given below:
List I: (Climatic Feature)
P. Loo
Q. Mango showers
R. Western Disturbance
S. Kalbaisakhi
List II: (Description)
I. Pre-monsoon showers aiding early ripening of fruits
II. Hot, dry, and oppressing winds in Northern India
III. Localised thunderstorms in West Bengal
IV. Cyclonic storms originating in the Mediterranean Sea
(A) P-II, Q-I, R-IV, S-III
(B) P-I, Q-II, R-III, S-IV
(C) P-IV, Q-III, R-I, S-II
(D) P-II, Q-IV, R-I, S-III
(E) Answer not known

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17. Which of the following features specifically defines the 'Rain Shadow Effect' experienced in India?
(A) Wind descent on the leeward side causing adiabatic warming
(B) Intense heating of the interior causing heavy cyclonic rains
(C) Convergence of trade winds near the equator producing storms
(D) Deflection of monsoon winds by Coriolis force causing rain
(E) Answer not known

18. What is the most appropriate reason for India being classified as having a 'Tropical Monsoon' climate?
(A) Geographic isolation caused by the Indian Ocean on all sides
(B) Position south of the equator where monsoon winds originate
(C) Tropical location and rainfall driven by seasonal wind reversals
(D) Total lack of distinct seasons and continuous annual rainfall
(E) Answer not known

19. Which of the following is an exception and NOT a factor affecting the climate of India?
(A) Longitude
(B) Altitude
(C) Distance from the sea
(D) Relief features
(E) Answer not known

20. Areas receiving average annual rainfall between 100 cm and 200 cm in India belong to which of the following classifications?
(A) High rainfall zone
(B) Medium rainfall zone
(C) Low rainfall zone
(D) Scanty rainfall zone
(E) Answer not known

21. What is the statistically normal date for the onset of the Southwest monsoon over the Kerala coast?
(A) May 15
(B) June 1
(C) June 15
(D) July 1
(E) Answer not known

22. Consider the following statements about the Arabian Sea branch of the Southwest monsoon:
I. One stream strikes the Western Ghats causing heavy orographic rainfall.
II. A second stream passes through the Narmada and Tapi river valleys.
III. A third stream moves parallel to the Aravali Range causing heavy floods in Western Rajasthan.
Which of the statements given above is/are incorrect?
(A) I and II only
(B) II and III only
(C) III only
(D) I and III only
(E) Answer not known

23. The following question consists of two statements, one labeled as Assertion (A) and the other as Reason (R). Examine these two statements carefully and select the correct answer using the codes given below.
Assertion (A): Tamil Nadu receives limited rainfall during the Southwest monsoon season.
Reason (R): Tamil Nadu is situated on the leeward side of the Western Ghats and is shielded from the Arabian Sea branch.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

24. Match List I with List II and select the correct answer using the codes given below:
List I: (Monsoon Feature)
P. Arabian Sea Branch
Q. Bay of Bengal Branch
R. Retreating Monsoon
S. Western Disturbances
List II: (Region Affected)
I. Coastal regions of Odisha and Andhra Pradesh
II. Western coast of India
III. Northwestern India (Punjab/Haryana)
IV. Meghalaya and Assam
(A) P-II, Q-IV, R-I, S-III
(B) P-I, Q-II, R-III, S-IV
(C) P-II, Q-I, R-IV, S-III
(D) P-IV, Q-III, R-I, S-II
(E) Answer not known

25. The season of Retreating Monsoon in India typically occurs during the months of:
(A) June and July
(B) August and September
(C) October and November
(D) December and January
(E) Answer not known

26. Arrange the normal month-wise progression of the Southwest monsoon reaching the following locations in India:
1. Southern tip of peninsular India
2. Mumbai
3. New Delhi
4. Entire country covered
Which of the following represents the correct sequence?
(A) 1, 2, 3, 4
(B) 1, 3, 2, 4
(C) 2, 1, 3, 4
(D) 2, 3, 1, 4
(E) Answer not known

27. Which of the following pairs is correctly matched regarding the retreating monsoon?
(A) October Heat - Rise in temperature and humidity
(B) Wind direction - Reversal from sea to land
(C) Rainfall region - Exclusive to Western Ghats
(D) Pressure system - Stability in the Bay of

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Bengal
(E) Answer not known

28. Consider the following statements regarding the Bay of Bengal branch of the Southwest monsoon:
I. It moves towards the northeast and strikes the Arakan Hills in Myanmar.
II. A portion is deflected westwards over the Ganga plains by the Himalayas.
III. It is responsible for the massive rainfall in Mawsynram.
IV. It provides heavy rainfall to the Coromandel coast in July.
Which of the statements given above are correct?
(A) I, II and III only
(B) II, III and IV only
(C) I and IV only
(D) I, III and IV only
(E) Answer not known

29. Identify the incorrect statement regarding the Northeast monsoon:
(A) It originates from the high-pressure system over the Tibetan plateau and Central Asia
(B) It picks up moisture from the Bay of Bengal before reaching the east coast of India
(C) It is characterized by winds blowing from land to sea in most parts of India
(D) It is the primary rainfall season for Kerala and coastal Karnataka
(E) Answer not known

30. The following question consists of two statements, one labeled as Assertion (A) and the other as Reason (R). Examine these two statements carefully and select the correct answer using the codes given below.
Assertion (A): The phenomenon of 'October Heat' is experienced during the retreating monsoon season.
Reason (R): It is caused by the combination of high temperature, high humidity, and clear skies after the monsoon withdrawal.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

31. Which of the following indicates the correct sequence of normal dates of advance of the Southwest Monsoon over India?
(A) Kerala (June 1), Mumbai (June 10), Delhi (June 30), Rajasthan (July 15)
(B) Kerala (June 1), Delhi (June 10), Mumbai (June 30), Rajasthan (July 15)
(C) Mumbai (June 1), Kerala (June 10), Rajasthan (June 30), Delhi (July 15)
(D) Kerala (May 15), Mumbai (June 1), Delhi (June 15), Rajasthan (July 1)
(E) Answer not known

32. Orographic rainfall occurs abundantly on the windward side of the Western Ghats. What primarily happens to the air mass as it descends the leeward side?
(A) It becomes cooler and condenses rapidly
(B) It absorbs moisture from the dry land and triggers thunderstorms
(C) It turns into a strong jet stream
(D) It warms up adiabatically and its relative humidity decreases
(E) Answer not known

33. Which of the following pairs of region and rainfall category is incorrectly matched?
(A) Eastern Rajasthan - Scanty rainfall zone
(B) Western Ghats - High rainfall zone
(C) Northern Bihar - Medium rainfall zone
(D) Interior Deccan Plateau - Low rainfall zone
(E) Answer not known

34. Consider the following characteristics of the Northeast Monsoon:
I. It is fully established over Tamil Nadu by late October.
II. It is highly variable and prone to producing cyclonic storms.
III. It brings rainfall mainly to the coastal districts of Tamil Nadu and Andhra Pradesh.
IV. It provides more than 75% of the annual rainfall for the entire Indian subcontinent.
V. Its winds are generally northeasterly in direction over the Bay of Bengal.
Which of the statements given above are correct?
(A) I, II, III and V only
(B) I, II, III and IV only
(C) I, III and V only
(D) II, IV and V only
(E) Answer not known

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35. Which of the following represents the correct statement regarding the withdrawal of the Southwest monsoon?
(A) Gradual process starting from northwestern India in early September
(B) Sudden retreat beginning from the southern peninsula in late September
(C) Simultaneous withdrawal from all regions of India on a fixed date
(D) Violent storm activity across the western coast during withdrawal
(E) Answer not known

36. Match List I with List II and select the correct answer using the codes given below:
List I: (Location)
P. Cherrapunji
Q. Jaisalmer
R. Mangaluru
S. Madurai
List II: (Rainfall Characteristics)
I. Rain shadow region during Southwest monsoon
II. Windward side of Western Ghats
III. Highest rainfall due to funnel-shaped valley
IV. Scanty rainfall in Thar Desert
(A) P-III, Q-IV, R-II, S-I
(B) P-III, Q-II, R-IV, S-I
(C) P-I, Q-IV, R-II, S-III
(D) P-II, Q-III, R-I, S-IV
(E) Answer not known

37. Which of the following is a primary characteristic of a rain shadow region?
(A) Intense orographic rainfall received during the initial monsoon onset
(B) Low rainfall due to location on the leeward side of a mountain range
(C) Constant cyclonic disturbances experienced throughout the calendar year
(D) Exclusive geographical presence along the coastal margins of the sea
(E) Answer not known

38. What is the most appropriate reason for Mawsynram recording the highest rainfall in the world?
(A) Proximity to the equator causing daily convectional rainfall events
(B) Convergence of both Arabian Sea and Bay of Bengal monsoon branches
(C) Funnel-shaped Khasi Hills forcing moisture-laden winds to condense
(D) Frequent tropical cyclones originating from the nearby Bay of Bengal
(E) Answer not known

39. Which of the following states is an exception and NOT receiving the least amount of rainfall during the Southwest monsoon season?
(A) Maharashtra
(B) West Bengal
(C) Kerala
(D) Tamil Nadu
(E) Answer not known

40. The area of influence of the Northeast monsoon is primarily categorised under which geographical region of India?
(A) Southeastern peninsula
(B) Northwestern states
(C) Northeastern states
(D) Central Indian plateau
(E) Answer not known

41. According to average annual precipitation records, which place holds the title for the highest rainfall in the world?
(A) Cherrapunji
(B) Mawsynram
(C) Agumbe
(D) Mahabaleshwar
(E) Answer not known

42. Consider the following statements regarding the Indian summer (hot dry weather season):
I. It occurs generally from March to May.
II. High temperatures are experienced due to the apparent northward movement of the sun.
III. It is characterised by widespread and continuous rainfall across Northern India.
Which of the statements given above is/are correct?
(A) I and II only
(B) II and III only
(C) I only
(D) I and III only
(E) Answer not known

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43. The following question consists of two statements, one labeled as Assertion (A) and

the other as Reason (R). Examine these two statements carefully and select the correct answer using the codes given below.

Assertion (A): Western Disturbances bring beneficial rainfall to Punjab and Haryana during winter.

Reason (R): This winter rainfall is highly important for the cultivation of Rabi crops like wheat.

(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

44. Match List I with List II and select the correct answer using the codes given below:

List I: (Climatological Season)
P. Winter Season
Q. Summer Season
R. Southwest Monsoon
S. Retreating Monsoon

List II: (Dominant Characteristic)
I. Hot and dry weather with Loo winds
II. Clear skies, low temperatures, and cold waves
III. October heat and tropical cyclones in the Bay of Bengal
IV. Maximum rainfall and high humidity across most of India

(A) P-II, Q-I, R-IV, S-III
(B) P-I, Q-II, R-III, S-IV
(C) P-III, Q-IV, R-I, S-II
(D) P-II, Q-IV, R-I, S-III
(E) Answer not known

45. The strong, gusty, hot, and dry winds blowing during the day over northwestern India in summer are known as:
(A) Mango showers
(B) Norwesters
(C) Chinooks
(D) Loo
(E) Answer not known

46. Arrange the following regions in the descending order of their average annual rainfall (from highest to lowest):
1. Khasi Hills (Mawsynram)
2. Ganga Basin (Delhi)
3. Western Rajasthan (Jaisalmer)
4. Brahmaputra Valley (Assam)

Which of the following represents the correct sequence?
(A) 1, 4, 2, 3
(B) 1, 2, 4, 3
(C) 4, 1, 2, 3
(D) 1, 4, 3, 2
(E) Answer not known

47. Which of the following pairs relating to weather phenomena is incorrectly matched?
(A) Loo - Summer season
(B) Western Disturbances - Originates in the Bay of Bengal
(C) October Heat - Retreating monsoon season
(D) Mango showers - Pre-monsoon period
(E) Answer not known

48. Consider the following statements about Western Disturbances:
I. They originate in the Mediterranean Sea region.
II. They travel towards India driven by the westerly jet streams.
III. They cause snowfall in the Himalayan regions.
IV. They are a primary source of rainfall for the Kharif crops in summer.

Which of the statements given above are correct?
(A) I, II and III only
(B) II, III and IV only
(C) I and IV only
(D) I, III and IV only
(E) Answer not known

49. Identify the incorrect statement regarding the seasonal distribution of rainfall in India:
(A) Continuous and heavy precipitation throughout the year in the interior peninsula
(B) Bulk of the annual rainfall concentrated over a period of just a few months
(C) Winter season remaining largely dry for most regional parts of the country
(D) Rapid decrease in rainfall amounts from the east coast to the west in the north
(E) Answer not known

50. The following question consists of two statements, one labeled as Assertion (A) and

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the other as Reason (R). Examine these two statements carefully and select the correct answer using the codes given below.

Assertion (A): The amount of rainfall received from Western Disturbances decreases from west to east in Northern India.

Reason (R): As these shallow cyclonic depressions travel eastwards, they progressively lose their moisture.

(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

51. Which of the following is the correct sequential cycle of the four major seasons in India as classified by the IMD, starting from the beginning of the calendar year?
(A) Winter, Hot Weather, Southwest Monsoon, Retreating Monsoon
(B) Hot Weather, Southwest Monsoon, Retreating Monsoon, Winter
(C) Winter, Retreating Monsoon, Hot Weather, Southwest Monsoon
(D) Southwest Monsoon, Retreating Monsoon, Winter, Hot Weather
(E) Answer not known

52. The path of Western Disturbances entering the Indian subcontinent is predominantly steered by which atmospheric mechanism?
(A) The Easterly Jet Stream
(B) The Inter Tropical Convergence Zone (ITCZ)
(C) The Northeast Trade Winds
(D) The Subtropical Westerly Jet Stream
(E) Answer not known

53. Which of the following pairs of geographical regions and their rainfall zones is correctly matched?
(A) Western coast - Very low rainfall zone
(B) Gujarat and Eastern Rajasthan - Medium rainfall zone
(C) Deccan Plateau - Extremely high rainfall zone
(D) Northeast India - Generally scanty rainfall zone
(E) Answer not known

54. Consider the following characteristics of the Retreating Monsoon season:
I. The monsoon trough weakens and gradually shifts southwards.
II. The weather is marked by clear skies and a rise in temperature.
III. It is the transition period from hot rainy season to dry winter conditions.
IV. The eastern coast of India frequently faces destructive tropical cyclones.
V. It brings the maximum rainfall to the western coast of India.
Which of the statements given above are correct?
(A) I, II, III and IV only
(B) II, III, IV and V only
(C) I, III and V only
(D) I, II, IV and V only
(E) Answer not known

55. Which of the following is a correct statement regarding the influence of global weather patterns on the Indian Monsoon?
(A) A strong El Nino generally results in above-normal rainfall in India
(B) The Indian Ocean Dipole (IOD) has no observable impact on the Northeast monsoon
(C) The shifting of the ITCZ is entirely unassociated with the monsoon mechanism
(D) La Nina is typically associated with a stronger and wetter Southwest monsoon
(E) Answer not known

56. Match List I with List II and select the correct answer using the codes given below:
List I: (Season)
P. Winter Season
Q. Hot Weather Season
R. Southwest Monsoon
S. Retreating Monsoon
List II: (IMD Classification Months)
I. March to May
II. June to September
III. October to December
IV. January and February
(A) P-IV, Q-I, R-II, S-III
(B) P-I, Q-II, R-III, S-IV
(C) P-IV, Q-II, R-I, S-III
(D) P-III, Q-I, R-IV, S-II

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(E) Answer not known

57. Which specific weather feature acts as a major discomfort during the hot dry weather season in the northern plains of India?
(A) Continuous drizzle from western disturbances
(B) Intense insolation and scorching Loo winds
(C) High humidity combined with severe cold waves
(D) Frequent formation of severe landlocked cyclones
(E) Answer not known

58. What is the most appropriate description of the economic significance of Western Disturbances?
(A) Provision of crucial water for Kharif crop transplantation in the Punjab
(B) Benefit to Rabi crops like wheat in Northwestern India
(C) Trigger for the initial onset of the Southwest monsoon over Kerala
(D) Prevention of cold Siberian winds from entering the subcontinent
(E) Answer not known

59. Which of the following is an exception and NOT a characteristic of the October and November transition season?
(A) Widespread occurrence of Loo winds
(B) High diurnal range of temperature
(C) Gradual withdrawal of the Southwest monsoon
(D) Frequent development of cyclonic depressions in the Andaman Sea
(E) Answer not known

60. The Leh region in Ladakh falls under which of the following categories of rainfall distribution?
(A) High rainfall zone
(B) Medium rainfall zone
(C) Low rainfall zone
(D) Scanty rainfall zone
(E) Answer not known

61. In which year did the severe cyclonic storm 'Vardah' make landfall near Chennai, causing widespread destruction in Tamil Nadu?
(A) 2015
(B) 2016
(C) 2018
(D) 2020
(E) Answer not known

62. Consider the following statements regarding the formation of tropical cyclones in the Bay of Bengal:
I. They require a sea surface temperature of at least 27°C.
II. The presence of the Coriolis force is essential to create the cyclonic vortex.
III. They frequently form near the equator where the Coriolis force is zero.
Which of the statements given above is/are correct?
(A) I and II only
(B) II and III only
(C) I only
(D) I and III only
(E) Answer not known

63. The following question consists of two statements, one labeled as Assertion (A) and the other as Reason (R). Examine these two statements carefully and select the correct answer using the codes given below.
Assertion (A): The Bay of Bengal experiences a higher frequency of tropical cyclones compared to the Arabian Sea.
Reason (R): The Bay of Bengal has higher sea surface temperatures and receives remnant cyclonic systems from the South China Sea.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

64. Match List I with List II and select the correct answer using the codes given below:
List I: (Major Cyclone affecting Tamil Nadu)
P. Vardah
Q. Gaja
R. Nivar
S. Mandous
List II: (Year of Occurrence)
I. 2022
II. 2020
III. 2018
IV. 2016

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(A) P-IV, Q-III, R-II, S-I
(B) P-III, Q-IV, R-I, S-II
(C) P-IV, Q-I, R-II, S-III
(D) P-I, Q-II, R-III, S-IV
(E) Answer not known

65. A tropical cyclone is best defined as:
(A) Intense low-pressure system with inward spiraling winds
(B) High-pressure system characterized by outwardly spiraling winds
(C) Stationary front that brings continuous drizzle for several days
(D) Localized thunderstorm exclusively driven by mountain relief
(E) Answer not known

66. Arrange the following severe cyclonic storms that affected Tamil Nadu in their correct chronological order of occurrence:
1. Nivar
2. Mandous
3. Gaja
4. Vardah

Which of the following represents the correct sequence?
(A) 4, 3, 1, 2
(B) 3, 4, 2, 1
(C) 4, 1, 3, 2
(D) 1, 4, 3, 2
(E) Answer not known

67. Which of the following pairs is incorrectly matched regarding cyclone-prone states in India?
(A) Madhya Pradesh - Vulnerability to coastal storm surges
(B) Tamil Nadu - East coast vulnerability
(C) Odisha - Frequent cyclonic landfalls
(D) West Bengal - Highly prone to Bay of Bengal cyclones
(E) Answer not known

68. Consider the following statements about the impact of tropical cyclones on India's east coast:
I. They cause massive storm surges leading to coastal inundation.
II. They bring extremely heavy rainfall resulting in flash floods.
III. They are completely absent during the retreating monsoon season.
IV. They cause severe damage to standing agricultural crops.

Which of the statements given above are correct?
(A) I, II and IV only
(B) II, III and IV only
(C) I and III only
(D) I, II and III only
(E) Answer not known

69. Identify the incorrect statement regarding the naming of cyclones in the Indian Ocean region:
(A) Naming helps the public and disaster management authorities easily identify and track the storm
(B) Only India has the authority to name all cyclones originating in the Bay of Bengal
(C) Cyclones are named according to a rotational list contributed by member countries of the WMO/ESCAP panel
(D) The name 'Mandous' was contributed by the UAE
(E) Answer not known

70. The following question consists of two statements, one labeled as Assertion (A) and the other as Reason (R). Examine these two statements carefully and select the correct answer using the codes given below.
Assertion (A): Tropical cyclones weaken rapidly after making landfall.
Reason (R): They are cut off from their primary energy source, which is the latent heat of condensation derived from warm ocean waters.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

71. Which of the following is the correct sequence of the intensification stages of a tropical cyclone over the Bay of Bengal?
(A) Low Pressure Area, Depression, Deep Depression, Cyclonic Storm
(B) Depression, Low Pressure Area, Cyclonic Storm, Deep Depression
(C) Deep Depression, Low Pressure Area, Depression, Cyclonic Storm
(D) Cyclonic Storm, Deep Depression,

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Depression, Low Pressure Area
(E) Answer not known

72. During the passage of a tropical cyclone, the 'eye' of the storm is characterized by:
(A) Calm, clear conditions with lowest atmospheric pressure
(B) Highest possible wind speeds and heaviest daily rainfall
(C) Severe lightning strikes and consistent thunderstorms
(D) Rapidly rising storm surges along the coastal margins
(E) Answer not known

73. Which of the following pairs is correctly matched regarding recent cyclones and their prominent impact area?
(A) Cyclone Vardah (2016) - Kutch region of Gujarat
(B) Cyclone Gaja (2018) - Cauvery delta districts
(C) Cyclone Mandous (2022) - Sundarbans in West Bengal
(D) Cyclone Nivar (2020) - Malabar coast of Kerala
(E) Answer not known

74. Consider the following conditions necessary for the formation and intensification of tropical cyclones:
I. Sea surface temperature greater than 27°C.
II. Presence of the Coriolis force.
III. Small variations in the vertical wind speed.
IV. A pre-existing weak low-pressure area.
V. Upper divergence above the sea level system.
Which of the statements given above are correct?
(A) I, II, III and IV only
(B) I, II, IV and V only
(C) I, II, III, IV and V
(D) II, III, IV and V only
(E) Answer not known

75. Which of the following statements correctly describes the Cyclone Mandous of 2022?
(A) Landfall near Mamallapuram with rain for northern Tamil Nadu
(B) Super cyclonic storm formation within the Arabian Sea basin
(C) Full bypass of Tamil Nadu with impact on coastal Andhra Pradesh
(D) Rare winter cyclone formation occurring during early January
(E) Answer not known

76. Match List I with List II and select the correct answer using the codes given below:
List I: (State)
P. Tamil Nadu
Q. Andhra Pradesh
R. Odisha
S. Gujarat
List II: (Coast Vulnerable to Cyclones)
I. Utkal Coast
II. Coromandel Coast
III. Northern Circars Coast
IV. Kathiawar Coast
(A) P-II, Q-III, R-I, S-IV
(B) P-I, Q-II, R-III, S-IV
(C) P-II, Q-IV, R-I, S-III
(D) P-III, Q-II, R-IV, S-I
(E) Answer not known

77. Identify the cyclone from its key features: It struck the Tamil Nadu coast in November 2018, causing devastating damage to coconut and agricultural plantations, particularly in the delta districts like Nagapattinam and Thanjavur.
(A) Vardah
(B) Nivar
(C) Mandous
(D) Gaja
(E) Answer not known

78. What is the most appropriate reason for the high death toll historically associated with tropical cyclones in coastal regions?
(A) Low atmospheric pressure causing acute breathing difficulties
(B) Frequency of continuous and dangerous lightning strikes
(C) Inundation of low-lying areas by storm surges
(D) Prolonged heat waves experienced post-cyclone
(E) Answer not known

79. Which of the following coastal states is least prone to the frequent severe impacts of tropical cyclones?
(A) Odisha
(B) Karnataka

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(C) Andhra Pradesh
(D) West Bengal
(E) Answer not known

80. The construction of multi-purpose cyclone shelters and bio-shields (like mangrove plantations) belongs to which category of disaster management?
(A) Emergency Response
(B) Post-disaster Recovery
(C) Damage Assessment
(D) Disaster Mitigation
(E) Answer not known

81. According to the National Disaster Management Authority (NDMA) guidelines, a drought is generally classified into how many primary types?
(A) Two
(B) Three
(C) Four
(D) Five
(E) Answer not known

82. Consider the following statements regarding the types of drought in India:
I. Meteorological drought occurs when there is a prolonged period of inadequate rainfall.
II. Agricultural drought refers to a situation where soil moisture is insufficient to support crops.
III. Hydrological drought happens immediately after two dry days in a month.
Which of the statements given above is/are incorrect?
(A) I and II only
(B) II and III only
(C) III only
(D) I and III only
(E) Answer not known

83. The following question consists of two statements, one labeled as Assertion (A) and the other as Reason (R). Examine these two statements carefully and select the correct answer using the codes given below.
Assertion (A): Ramanathapuram district in Tamil Nadu is frequently prone to drought conditions.
Reason (R): It is located in the rain shadow region of the Western Ghats and experiences high variability in Northeast monsoon rainfall.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

84. Match List I with List II and select the correct answer using the codes given below:
List I: (Type of Drought)
P. Meteorological drought
Q. Agricultural drought
R. Hydrological drought
S. Socio-economic drought
List II: (Definition)
I. Decline in surface and subsurface water levels
II. Significant shortfall in precipitation over a region
III. Demand for economic goods exceeds supply due to water shortfall
IV. Soil moisture stress causing crop failure
(A) P-II, Q-IV, R-I, S-III
(B) P-I, Q-II, R-III, S-IV
(C) P-II, Q-I, R-IV, S-III
(D) P-IV, Q-III, R-II, S-I
(E) Answer not known

85. Hydrological drought is best defined as a situation where:
(A) Crops wilt due to lack of immediate topsoil moisture
(B) Depletion of surface water bodies and groundwater reservoirs
(C) Annual rainfall is less than 10% of the normal average
(D) Urban water distribution pipes are damaged by pressure
(E) Answer not known

86. Arrange the typical progression of drought phenomena in chronological order:
1. Hydrological drought
2. Meteorological drought
3. Socio-economic drought
4. Agricultural drought
Which of the following represents the correct sequence?
(A) 2, 4, 1, 3

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(B) 2, 1, 4, 3
(C) 1, 2, 4, 3
(D) 4, 2, 1, 3
(E) Answer not known

87. Which of the following pairs is correctly matched regarding drought-prone districts in Tamil Nadu?
(A) Kanyakumari - Highly drought prone
(B) Nilgiris - Severe drought prone
(C) Chennai - Primary agricultural drought prone
(D) Virudhunagar - Chronically drought prone
(E) Answer not known

88. Consider the following statements regarding the causes of the 2015 Chennai floods:
I. Extremely heavy downpours associated with the Northeast monsoon.
II. Encroachment of lakes, wetlands, and floodplains due to rapid urbanization.
III. Sudden release of excess water from the Chembarambakkam reservoir.
IV. Melting of glaciers in the Western Ghats.
Which of the statements given above are correct?
(A) I, II and III only
(B) II, III and IV only
(C) I, III and IV only
(D) I and II only
(E) Answer not known

89. Identify the incorrect statement regarding flood-prone regions and urban flooding:
(A) Urban flooding is largely a man-made disaster caused by poor drainage infrastructure
(B) Flooding in Indian cities only occurs during the Southwest monsoon season
(C) Tamil Nadu's coastal districts are prone to floods due to heavy rainfall from cyclones
(D) The 2015 Chennai floods highlighted the importance of preserving urban wetlands
(E) Answer not known

90. The following question consists of two statements, one labeled as Assertion (A) and the other as Reason (R). Examine these two statements carefully and select the correct answer using the codes given below.
Assertion (A): The frequency and intensity of urban flooding in cities like Chennai have increased in recent decades.
Reason (R): Unplanned urban expansion has led to the concretization of natural drainage channels and reduction of water bodies.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

91. Which of the following is the standard sequence of phases in the disaster management cycle for floods?
(A) Response, Preparedness, Recovery, Mitigation
(B) Preparedness, Response, Recovery, Mitigation
(C) Mitigation, Recovery, Response, Preparedness
(D) Recovery, Mitigation, Preparedness, Response
(E) Answer not known

92. The prolonged occurrence of an agricultural drought in Tamil Nadu's interior districts would most directly lead to:
(A) Immediate rise in the local groundwater tables
(B) Increased generation of hydroelectric power supply
(C) Crop failure and distress migration of laborers
(D) Frequent formation of severe tropical cyclones
(E) Answer not known

93. Which of the following pairs of Indian regions and their flood vulnerability is incorrectly matched?
(A) Brahmaputra Valley - Highly flood-prone
(B) Coastal Odisha - Cyclone-induced flooding
(C) Coastal Andhra Pradesh - Storm surge flooding
(D) Western Rajasthan - Annual riverine floods
(E) Answer not known

94. Consider the following impacts of the 2015 Chennai floods:
I. Severe disruption of power and

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communication networks.
II. Halting of operations at the Chennai International Airport.
III. Large-scale displacement of residents in low-lying areas.
IV. Contamination of drinking water sources leading to health risks.
V. A permanent shift in the course of the Adyar river to the north.
Which of the statements given above are correct?
(A) I, II, III and V only
(B) I, II, III and IV only
(C) II, III, IV and V only
(D) I, III, IV and V only
(E) Answer not known

95. Which of the following is a correct statement identifying the drought-prone districts of Tamil Nadu as per the standard vulnerability classifications?
(A) Kanchipuram and Tiruvallur are the most drought-prone districts
(B) Ramanathapuram, Virudhunagar, and Dindigul fall under this category
(C) The delta districts of Thanjavur and Tiruvarur experience permanent drought conditions
(D) The Western Ghats districts are entirely categorized as drought-prone
(E) Answer not known

96. Match List I with List II and select the correct answer using the codes given below:
List I: (Tamil Nadu District)
P. Chennai
Q. Ramanathapuram
R. Nagapattinam
S. Nilgiris
List II: (Disaster Vulnerability)
I. Landslides during heavy monsoon rains
II. Urban flooding and coastal inundation
III. Highly vulnerable to cyclonic storms and storm surges
IV. Chronically drought-prone due to rain shadow effect
(A) P-II, Q-IV, R-III, S-I
(B) P-I, Q-II, R-IV, S-III
(C) P-III, Q-I, R-II, S-IV
(D) P-II, Q-III, R-IV, S-I
(E) Answer not known

97. Identify the Tamil Nadu district from the following that is distinctly characterized by low and highly erratic rainfall, leading to frequent drought conditions:
(A) Virudhunagar
(B) Coimbatore
(C) Tirunelveli
(D) Chengalpattu
(E) Answer not known

98. What is the most appropriate lesson for urban planning derived from the 2015 Chennai floods?
(A) Permanent ban on industrial development within urban boundaries
(B) Construction of higher sea walls to block extreme high tides
(C) Protecting and desilting urban wetlands and drainage channels
(D) Complete population relocation to the interior state districts
(E) Answer not known

99. Which of the following districts is an exception and NOT generally considered a chronically drought-prone district in Tamil Nadu?
(A) Cuddalore
(B) Ramanathapuram
(C) Virudhunagar
(D) Dindigul
(E) Answer not known

100. The implementation of watershed management, rainwater harvesting, and crop diversification are primarily categorised as strategies for:
(A) Cyclone emergency response
(B) Flood warning systems
(C) Urban heat island reduction
(D) Drought mitigation
(E) Answer not known

101. A heat wave in the plains of India is officially declared by the IMD when the maximum temperature reaches at least:
(A) 35°C
(B) 40°C
(C) 45°C
(D) 50°C
(E) Answer not known

102. Consider the following statements regarding the climate of Tamil Nadu:

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I. It has a tropical climate due to its location near the equator.
II. It receives the bulk of its rainfall from the Southwest monsoon.
III. The coastal regions have a lower annual temperature range compared to the interior districts.

Which of the statements given above is/are correct?
(A) I and II only
(B) II and III only
(C) I and III only
(D) I only
(E) Answer not known

103. The following question consists of two statements, one labeled as Assertion (A) and the other as Reason (R). Examine these two statements carefully and select the correct answer using the codes given below.

Assertion (A): Northern India frequently experiences severe cold waves during the winter months.

Reason (R): It has a continental location far from the moderating influence of the sea, and receives cold winds moving down from the snow-clad Himalayas.

(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

104. Match List I with List II and select the correct answer using the codes given below:

List I: (Weather Phenomenon)
P. Dense Winter Fog
Q. Severe Heat Waves
R. Pre-monsoon Thunderstorms
S. Northeast Monsoon Rainfall

List II: (Region typically affected in India)
I. Indo-Gangetic Plains (Dec-Jan)
II. Central and Northwestern India (May-June)
III. Kerala and West Bengal (April-May)
IV. Tamil Nadu Coastal Districts (Oct-Dec)

(A) P-I, Q-II, R-III, S-IV
(B) P-II, Q-I, R-IV, S-III
(C) P-III, Q-IV, R-I, S-II
(D) P-I, Q-IV, R-II, S-III
(E) Answer not known

105. The primary rainy season for Tamil Nadu, which accounts for the majority of its annual precipitation, occurs during the months of:
(A) June to September
(B) October to December
(C) January to March
(D) April to May
(E) Answer not known

106. Arrange the typical stages in the life cycle of a thunderstorm in the correct sequential order:
1. Dissipating stage
2. Cumulus (developing) stage
3. Mature stage

Which of the following represents the correct sequence?
(A) 2, 3, 1
(B) 3, 2, 1
(C) 1, 2, 3
(D) 2, 1, 3
(E) Answer not known

107. Which of the following pairs is correctly matched regarding weather events in Tamil Nadu?
(A) Retreating monsoon season - Primary cyclone season for the east coast
(B) Summer season - Heavy continuous snow
(C) Southwest monsoon season - Maximum rainfall for coastal Tamil Nadu
(D) Winter season - Severe heat waves
(E) Answer not known

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108. Consider the following statements about the microclimate of the Nilgiris:
I. It experiences much lower temperatures compared to the surrounding plains.
II. Frequent fog and mist are common, especially during the monsoon and winter.
III. It receives rainfall from both the Southwest and Northeast monsoons.
IV. The climate is primarily classified as an arid desert climate.

Which of the statements given above are correct?
(A) I, II and III only
(B) II, III and IV only
(C) I and IV only
(D) I, III and IV only
(E) Answer not known

109. Identify the incorrect statement regarding the temperature pattern of Tamil Nadu:
(A) Coastal areas enjoy a moderate climate due to the influence of sea and land breezes
(B) Interior districts like Vellore and Madurai experience high summer temperatures
(C) The diurnal range of temperature is generally higher in the interior regions than on the coast
(D) The hill stations in the Western Ghats record the highest temperatures in the state during May
(E) Answer not known

110. The following question consists of two statements, one labeled as Assertion (A) and the other as Reason (R). Examine these two statements carefully and select the correct answer using the codes given below.
Assertion (A): The coastal city of Chennai does not experience extreme seasonal variations in temperature.
Reason (R): The daily occurrence of sea breeze and land breeze regulates the temperature along the coast.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

111. Which of the following is the correct sequence of the traditional Tamil rainfall seasons in chronological order starting from June?
(A) Southwest Monsoon, Northeast Monsoon, Winter, Pre-monsoon
(B) Northeast Monsoon, Southwest Monsoon, Pre-monsoon, Winter
(C) Southwest Monsoon, Winter, Northeast Monsoon, Pre-monsoon
(D) Pre-monsoon, Southwest Monsoon, Northeast Monsoon, Winter
(E) Answer not known

112. The Urban Heat Island (UHI) effect observed in cities like Chennai and Coimbatore is primarily a result of:
(A) Significant increase in urban parklands and freshwater lakes
(B) Rapid movement of the ITCZ specifically over major city centers
(C) Enhanced orographic precipitation focused on urban municipalities
(D) Replacement of natural cover with dense heat-retaining materials
(E) Answer not known

113. Which of the following pairs is incorrectly matched regarding Tamil Nadu's climate features?
(A) Lowest summer temperatures - Vellore
(B) Coastal moderation - Chennai
(C) Urban Heat Island effect - Coimbatore
(D) Cool microclimate - Udhagamandalam (Ooty)
(E) Answer not known

114. Consider the following statements regarding heat waves and their impacts:
I. They can cause severe health impacts like heat exhaustion and heatstroke.
II. They increase the risk of power grid failures due to high electricity demand.
III. They are most commonly experienced during the months of December and January.
IV. Vulnerable populations like the elderly and outdoor workers are at the highest risk.
V. IMD issues color-coded alerts to warn the public about impending heat waves.
Which of the statements given above are correct?
(A) I, II, III and V only
(B) I, II, IV and V only
(C) II, III, IV and V only
(D) I, III, IV and V only
(E) Answer not known

115. Which of the following is a correct statement regarding sea and land breezes in Tamil Nadu?
(A) Afternoon sea breeze bringing cooler temperatures to coastal cities
(B) Nighttime wind blowing from land to sea to warm coastal regions
(C) Midday land breezes causing extreme heating across the capital city
(D) Total absence of local sea and land breezes during the summer months
(E) Answer not known

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116. Match List I with List II and select the correct answer using the codes given below:
List I: (Location in Tamil Nadu)
P. Nilgiris
Q. Chennai
R. Vellore
S. Kanyakumari
List II: (Climatic Feature)
I. High interior summer heat and dry conditions
II. Coastal equable climate with UHI effect
III. Receives rainfall from both monsoons due to location
IV. Fog, mist, and very low winter temperatures
(A) P-IV, Q-II, R-I, S-III
(B) P-I, Q-II, R-III, S-IV
(C) P-IV, Q-I, R-II, S-III
(D) P-II, Q-III, R-IV, S-I
(E) Answer not known

117. Identify the specific feature associated with the microclimate of the Nilgiris:
(A) Frequent occurrence of severe dust storms
(B) Nighttime radiational cooling causing winter frost in valleys
(C) High diurnal temperature range comparable to deserts
(D) Total absence of any localized orographic rainfall
(E) Answer not known

118. What is the most appropriate reason for the high incidence of lightning during the pre-monsoon thunderstorms in Tamil Nadu?
(A) Horizontal movement of the westerly jet stream over the peninsula
(B) Unique interaction of ocean currents with the coastal landmass
(C) Convective solar heating leading to charge separation in clouds
(D) Rapid seasonal melting of glaciers in the higher state altitudes
(E) Answer not known

119. Which of the following is an exception and NOT a contributing factor to the Urban Heat Island effect in Chennai?
(A) High density of concrete and asphalt surfaces
(B) Waste heat generated by vehicles and air conditioners
(C) Reduced airflow due to tall buildings
(D) Extensive coverage of mangrove forests within the city
(E) Answer not known

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120. The high inter-annual rainfall variability in Tamil Nadu's climate is largely attributed to its heavy dependence on the:
(A) Dependence on the erratic Northeast monsoon and cyclonic systems
(B) Stable and predictable Arabian Sea branch of the Southwest monsoon
(C) Periodic Western disturbances originating in the Mediterranean basin
(D) Localised convectional rainfall occurring during the summer months
(E) Answer not known

121. In which year was the India Meteorological Department (IMD) established to systematically study and forecast weather in India?
(A) 1875
(B) 1905
(C) 1947
(D) 1950
(E) Answer not known

122. Consider the following functions of the India Meteorological Department (IMD):
I. Providing meteorological statistics required for agriculture, water resource management, and industries.
II. Issuing warnings against severe weather phenomena like tropical cyclones and heat waves.
III. Managing the construction of dams and irrigation canals.
Which of the statements given above is/are correct?
(A) I and II only
(B) II and III only
(C) I and III only
(D) I only
(E) Answer not known

123. The following question consists of two statements, one labeled as Assertion (A) and the other as Reason (R). Examine these two statements carefully and select the correct answer using the codes given below.
Assertion (A): The occurrence of El Nino is

generally considered detrimental to the Indian Southwest monsoon.
Reason (R): El Nino disrupts the normal pressure distribution over the Pacific and Indian Oceans, leading to a weakening of the monsoon winds.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

124. Match List I with List II and select the correct answer using the codes given below:
List I: (Forecasting Tool/Technology)
P. Doppler Weather Radar
Q. Satellite Imagery (INSAT)
R. Radiosonde
S. Anemometer
List II: (Application)
I. Measuring wind speed at the surface
II. Measuring vertical profiles of temperature and humidity
III. Tracking broad-scale cloud cover and cyclone movement
IV. Real-time detection of precipitation intensity and storm structure
(A) P-IV, Q-III, R-II, S-I
(B) P-III, Q-IV, R-I, S-II
(C) P-I, Q-II, R-III, S-IV
(D) P-II, Q-I, R-IV, S-III
(E) Answer not known

125. The Indian Ocean Dipole (IOD) is a coupled ocean-atmosphere phenomenon characterised by:
(A) Continuous shifting of the ITCZ from the equator to the poles
(B) Periodic reversal of the high altitude westerly jet stream
(C) Cyclic formation of anticyclones over the Tibetan plateau
(D) Sea surface temperature differences between Indian Ocean sectors
(E) Answer not known

126. Arrange the following IMD weather forecasting ranges in increasing order of their time-scale (from shortest to longest duration):
1. Medium Range Forecast
2. Nowcasting
3. Long Range Forecast
4. Short Range Forecast
Which of the following represents the correct sequence?
(A) 2, 4, 1, 3
(B) 4, 2, 1, 3
(C) 2, 1, 4, 3
(D) 1, 2, 3, 4
(E) Answer not known

127. Which of the following pairs relating to global weather phenomena and their typical impact on India is correctly matched?
(A) El Nino - Enhanced and above-normal Southwest monsoon
(B) La Nina - Associated with a stronger Southwest monsoon
(C) Negative IOD - Highly beneficial for rainfall in western India
(D) Positive IOD - Leads to severe droughts across the entire subcontinent
(E) Answer not known

128. Consider the following statements regarding the mechanism of El Nino:
I. It involves the abnormal warming of sea surface temperatures in the central and eastern equatorial Pacific.
II. It weakens the trade winds that normally push warm water towards the western Pacific.
III. It results in heavy rainfall in Indonesia and Australia while causing drought in South America.
IV. It significantly shifts the global atmospheric circulation, impacting the Indian monsoon.
Which of the statements given above are correct?
(A) I, II and III only
(B) I, II and IV only
(C) II, III and IV only
(D) I, III and IV only
(E) Answer not known

129. Identify the incorrect statement regarding the weather forecasting infrastructure in India:
(A) Weather forecasting relying entirely on manual ground-based observations
(B) IMD operates a network of Doppler Weather Radars to monitor extreme weather events

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(C) Satellite imagery from ISRO's INSAT series is extensively used for cloud tracking
(D) Agro-meteorological advisory services are provided to farmers based on short and medium-range forecasts
(E) Answer not known

130. The following question consists of two statements, one labeled as Assertion (A) and the other as Reason (R). Examine these two statements carefully and select the correct answer using the codes given below.
Assertion (A): A Positive Indian Ocean Dipole (IOD) generally aids the Indian Southwest monsoon.
Reason (R): During a Positive IOD, the western Indian Ocean becomes unusually warmer than the eastern part, increasing moisture supply to the monsoon winds.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

131. Which of the following is the correct sequence of phases in the El Nino-Southern Oscillation (ENSO) cycle?
(A) El Nino, Neutral, La Nina
(B) La Nina, El Nino, Neutral
(C) Neutral, La Nina, El Nino
(D) ENSO continuously alternates between El Nino and La Nina without any neutral phase
(E) Answer not known

132. How does a Positive Indian Ocean Dipole (IOD) impact the Northeast monsoon in Tamil Nadu?
(A) It typically suppresses rainfall, causing severe droughts
(B) It causes the Northeast monsoon winds to reverse direction completely
(C) It has absolutely no correlation with the Northeast monsoon
(D) Enhanced convective activity leading to normal rainfall in Tamil Nadu
(E) Answer not known

133. Which of the following pairs of IMD forecast services is incorrectly matched with its target sector?
(A) Aviation meteorology - Safe flight operations
(B) Positional astronomy - Predicting the exact path of jet streams
(C) Marine meteorology - Warning fishermen about high sea waves
(D) Agrometeorology - Advising farmers on sowing and harvesting
(E) Answer not known

134. Consider the following applications of a Doppler Weather Radar network in India:
I. Tracking the precise location and intensity of tropical cyclones.
II. Estimating the amount of rainfall in real-time.
III. Providing short-term forecasts (nowcasting) for severe thunderstorms.
IV. Detecting wind patterns and severe turbulence in the atmosphere.
V. Altering the path of an approaching cyclone.
Which of the statements given above are correct?
(A) I, II, III and IV only
(B) II, III, IV and V only
(C) I, III, IV and V only
(D) I, II, IV and V only
(E) Answer not known

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135. Which of the following is a correct statement regarding the use of satellite imagery in weather forecasting?
(A) Daylight-only observation of localized weather conditions
(B) Complete replacement of all terrestrial weather stations
(C) Geostationary orbits providing only broad global forecasts
(D) Infrared monitoring of cloud cover and temperatures 24/7
(E) Answer not known

136. Match List I with List II and select the correct answer using the codes given below:
List I: (Oceanic Phenomenon)
P. Strong El Nino
Q. Strong La Nina
R. Positive IOD
S. Negative IOD
List II: (Typical Monsoon Impact on India)

I. Favourable for normal/above-normal Southwest monsoon
II. Generally suppresses the Southwest monsoon
III. Usually enhances the Southwest monsoon
IV. Favourable for the monsoon but less influential than ENSO
(A) P-II, Q-I, R-III, S-IV
(B) P-I, Q-II, R-III, S-IV
(C) P-III, Q-IV, R-I, S-II
(D) P-II, Q-I, R-IV, S-III
(E) Answer not known

137. Identify the key feature of a La Nina event:
(A) Unusually warm ocean temperatures in the Equatorial Pacific
(B) Unusually cold ocean temperatures in the Equatorial Pacific
(C) High pressure over the western Pacific and low pressure over the eastern Pacific
(D) Absence of trade winds across the global oceans
(E) Answer not known

138. What is the most appropriate main advantage of having a Doppler Weather Radar installed in Chennai?
(A) Atmospheric stabilization to prevent cyclone formation in the Bay
(B) Real-time data for precise early rainfall and cyclone warnings
(C) Drastic reduction of the urban heat island effect across the city
(D) Increased volume of precipitation during the Northeast monsoon
(E) Answer not known

139. Which of the following is an exception and NOT a routine service provided by the India Meteorological Department (IMD)?
(A) Regulating the market prices of agricultural commodities
(B) Issuing color-coded weather alerts
(C) Maintaining the seismological network of the country
(D) Providing astronomical data for the publication of the Rashtriya Panchang
(E) Answer not known

140. Weather forecasting is categorised based on the lead time of the prediction. A forecast that covers a period of 3 to 10 days is classified as:
(A) Nowcasting
(B) Short-range forecast
(C) Medium-range forecast
(D) Long-range forecast
(E) Answer not known

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ANSWERS

1. (A) Weather refers to short-term atmospheric states, whereas climate refers to long-term averages over large regions
Weather represents the day-to-day state of the atmosphere, including short-term changes in temperature, precipitation, and wind at a specific location. Conversely, climate signifies the long-term average of these weather patterns, typically measured over thirty years or more. While weather changes rapidly, climate provides a stable statistical description of what to expect in a region.

2. (A) I and II only
Altitude significantly impacts temperature, as the atmosphere becomes thinner and colder with increasing height at a standard lapse rate. The Himalayan range acts as a formidable barrier, shielding the Indian subcontinent from frigid Arctic winds originating in Central Asia. Coastal areas experience equable climates with minimal temperature variation due to the proximity of the ocean.

3. (A) Both A and R are true and R is the correct explanation of A.
Coastal cities like Chennai maintain a moderate climate throughout the year because of their proximity to the sea. The distinct thermal properties of land and water lead to the formation of sea breezes during the day and land breezes at night. These localized wind patterns regulate temperature extremes, preventing the occurrence of harsh summers or winters.

4. (B) P-II, Q-III, R-IV, S-I
The Koppen classification uses specific letter codes to describe regional climates based on temperature and precipitation. Amw denotes a monsoon type with a short dry season found along the Western Coast. Aw represents tropical savanna in the Peninsular Plateau, while Cwg signifies the Ganga Plain. E refers to the polar climate found in the Himalayan regions.

5. (B) Season
The term originates from the Arabic word Mausim, which translates directly to season. Historically, this term was used by sailors and traders to describe the seasonal reversal of winds over the Arabian Sea and Indian Ocean. This wind system brings significant changes in weather patterns, specifically rainfall, defining the agricultural cycles across the Indian subcontinent.

6. (A) 2, 4, 1, 3
The Southwest Monsoon typically enters the Indian mainland at the Kerala coast around the first week of June. It then progresses northward along the western coastline, reaching Karnataka shortly after. As the monsoon advances further into the subcontinent, it arrives in Maharashtra by mid-June and eventually reaches Gujarat by the end of the month.

7. (D) Distance from sea - Continental climate in interior regions like Delhi
The distance from the sea, or continentality, significantly influences local climate patterns. Regions situated far from the ocean, such as Delhi, experience an interior or continental climate characterized by extreme temperature differences between summer and winter. In contrast, coastal areas remain moderate. Other factors like latitude and relief also play roles but operate through different geographic mechanisms.

8. (C) I, III and IV only
The Indian Monsoon mechanism involves complex atmospheric processes. Differential heating between the landmass and the surrounding ocean creates a low-pressure zone over India. The intense heating of the Tibetan plateau results in strong vertical air currents. Additionally, a high-pressure cell near Madagascar pushes moisture towards the subcontinent. However, the ITCZ shifts northward during the summer.

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9. (B) It leads to higher than normal rainfall and frequent floods across the entire Indian subcontinent
El Nino is an atmospheric and oceanic event involving the periodic warming of surface waters in the central and eastern Pacific Ocean. This phenomenon disrupts global weather patterns and is often linked to the weakening of the Indian monsoon circulation. Contrary to causing widespread floods in India, it is statistically associated with reduced rainfall and drought.

10. (C) A is true but R is false.
The Western Ghats act as a significant topographic barrier to moisture-laden winds. During the Southwest monsoon, the Arabian Sea branch strikes these mountains perpendicularly. This forcing causes the air to rise and cool, leading to heavy orographic precipitation on the windward side. However, the range is not parallel to the winds; its perpendicular orientation causes the rain.

11. (A) Northwestern India, Central India, Peninsular India
The retreat or withdrawal of the Southwest monsoon is a gradual process that begins in Northwestern India during early September. As the season progresses, the monsoon winds move southward, withdrawing from Central India by mid-October. Finally, the system clears Peninsular India by early December. This transition marks the change from the rainy season to the winter season.

12. (C) Monsoon trough formation attracting moisture-laden winds
During the summer, the Inter Tropical Convergence Zone shifts northward towards the Ganga plain. This movement creates a low-pressure zone known as the monsoon trough. This trough acts as a powerful vacuum, attracting moisture-heavy winds from the surrounding oceans toward the Indian landmass. This influx of maritime air is the primary driver for the onset of seasonal rainfall.

13. (D) Medium rainfall zone - Gujarat and Eastern Rajasthan
India exhibits diverse rainfall zones based on geographical location. The Western Coast and Northeast receive high rainfall. The Deccan plateau and parts of Uttar Pradesh fall into low rainfall categories. However, Gujarat and Eastern Rajasthan generally fall under the low or scanty rainfall classification rather than medium, due to their proximity to the Thar Desert and reduced moisture.

14. (B) I, II, III and V only
The Southwest Monsoon provides roughly three-quarters of India's annual rainfall. It typically arrives in Kerala by early June and blankets the entire country by mid-July. The Arabian Sea branch carries more moisture than the Bay of Bengal branch. Conversely, the Aravali Range lies parallel to the monsoon winds, which prevents it from forcing orographic rainfall in Rajasthan.

15. (B) The easterly jet stream steers tropical depressions into India during the monsoon season
Jet streams are high-altitude winds that significantly impact India's weather. The tropical easterly jet stream, which develops over the peninsula during summer, plays a crucial role in steering tropical depressions from the Bay of Bengal into the mainland. These depressions bring heavy rainfall across central India. In contrast, the westerly jet stream is associated with winter weather patterns.

16. (A) P-II, Q-I, R-IV, S-III
Various local weather events occur across India during different seasons. Loo consists of hot, dry winds in the northern plains. Mango showers are pre-monsoon rains in the south that help ripen fruits. Western Disturbances are winter storms from the Mediterranean that bring rain to the northwest. Kalbaisakhi refers to violent afternoon thunderstorms that occur in West Bengal.

17. (A) Wind descent on the leeward side causing adiabatic warming
The rain shadow effect occurs when moist air is forced over a mountain range. As the air rises on the windward side, it cools and drops precipitation. Once the air crosses the peak and descends the leeward side, it warms adiabatically and loses its ability to produce rain. This specific thermodynamic process creates dry regions on the interior side.

18. (C) Tropical location and rainfall driven by seasonal wind reversals
India is classified as having a tropical monsoon climate because of its geographical location between the tropics and the unique seasonal reversal of winds. The climate is defined by distinct wet and dry periods. This reversal, driven by the differential heating of land and sea, dictates the timing and intensity of rainfall, which is essential for national agriculture.

19. (A) Longitude
Several geographical factors determine the climate of a region. Altitude affects temperature, while distance from the sea moderates weather through marine influences. Relief features like mountains guide wind patterns and rainfall distribution. However, longitude primarily determines time zones and has no direct physical impact on the climatic characteristics or atmospheric processes of the Indian subcontinent or other regions.

20. (B) Medium rainfall zone
Rainfall in India is categorized into specific zones based on average annual totals. Regions receiving between 100 cm and 200 cm of rain are classified as medium rainfall zones. This category includes parts of the Ganga valley and eastern peninsular India. Areas exceeding 200 cm are high rainfall zones, while those receiving less than 100 cm are considered low.

21. (B) June 1
The India Meteorological Department monitors the arrival of moisture-laden winds to declare the onset of the monsoon. Statistically, the Southwest monsoon reaches the Kerala coast on June 1. This event marks the beginning of the four-month rainy season for the Indian mainland. While the exact date may vary slightly each year, June 1 remains the long-term average.

22. (C) III only
The Arabian Sea branch divides into three streams upon reaching India. One stream strikes the Western Ghats, causing heavy rain. The second stream travels through the Narmada and Tapi valleys into Central India. The third stream moves over Saurashtra and Kachchh; however, since it travels parallel to the Aravali Range, it fails to produce heavy rain in Rajasthan.

23. (A) Both A and R are true and R is the correct explanation of A.
During the Southwest monsoon, Tamil Nadu remains relatively dry because of its geographic position. The state is situated on the leeward side of the Western Ghats, which blocks the moisture-laden winds from the Arabian Sea. Consequently, the air descending over Tamil Nadu is dry and warm, creating a rain shadow effect that limits precipitation during this specific season.

24. (A) P-II, Q-IV, R-I, S-III
Different wind systems affect specific geographical regions across the country. The Arabian Sea branch impacts the Western Coast, while the Bay of Bengal branch brings intense rain to Meghalaya and Assam. The retreating monsoon is responsible for rainfall on the eastern coasts of Odisha and Andhra Pradesh. Western Disturbances primarily bring winter precipitation to the Northwestern plains.

25. (C) October and November
The retreating monsoon season occurs during October and November. This period marks the transition from the wet Southwest monsoon to the dry winter season. As the sun moves southward, the low-pressure trough over the Ganga plains weakens and shifts toward the Bay of Bengal. This shift results in clear skies over northern India and cyclonic rainfall along the coast.

26. (A) 1, 2, 3, 4
The Southwest monsoon follows a predictable path across the Indian subcontinent. It first strikes the southern tip of the peninsula in early June. By mid-June, the winds reach Mumbai on the western coast. The progression continues inland, reaching the national capital, New Delhi, by late June. Finally, the entire country is typically covered by the monsoon by mid-July.

27. (A) October Heat - Rise in temperature and humidity
The retreating monsoon period is associated with a weather phenomenon known as October Heat. This occurs when the monsoon withdraws, leaving the land moist under clear skies. The combination of high daytime temperatures and high humidity creates oppressive and uncomfortable conditions. During this time, the

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wind direction also begins to reverse, moving from the land back toward the sea.

28. (A) I, II and III only
The Bay of Bengal branch of the monsoon moves northward toward the Arakan Hills and the Himalayas. A significant portion is deflected westwards by the mountains, bringing rainfall to the Ganga plains. It is also responsible for the world-record rainfall in Mawsynram. However, this branch does not provide heavy rain to the Coromandel coast in July; that occurs later.

29. (D) It is the primary rainfall season for Kerala and coastal Karnataka
The Northeast monsoon originates from high-pressure systems over Central Asia and the Tibetan plateau. These winds blow from land to sea across most of India, keeping the weather dry. However, as they cross the Bay of Bengal, they pick up moisture and bring significant rainfall to the Coromandel coast of Tamil Nadu. It is not the primary season for Karnataka.

30. (A) Both A and R are true and R is the correct explanation of A.
October Heat is a characteristic of the retreating monsoon season in India. After the rainy season, the skies clear up, allowing for intense solar radiation. Simultaneously, the ground remains saturated with moisture. The combination of rising temperatures and high humidity makes the weather very oppressive. This phenomenon is a direct result of the atmospheric transition during the monsoon withdrawal.

31. (A) Kerala (June 1), Mumbai (June 10), Delhi (June 30), Rajasthan (July 15)
The Southwest monsoon advances in a specific chronological order across the country. It typically arrives in Kerala on June 1. The winds then move up the coast to reach Mumbai by June 10. The inland progression leads to the arrival of rain in Delhi by June 30. Finally, the monsoon covers the westernmost parts of Rajasthan by July 15.

32. (D) It warms up adiabatically and its relative humidity decreases
When moist air is forced over the Western Ghats, it cools and precipitates on the windward side. As the air mass crosses the ridge and descends the leeward side, it undergoes adiabatic compression. This process causes the air to warm up. Consequently, its capacity to hold moisture increases, leading to a significant decrease in relative humidity and scanty rainfall.

33. (A) Eastern Rajasthan - Scanty rainfall zone
Rainfall distribution varies significantly across India. The Western Ghats receive high rainfall, while the interior Deccan Plateau is a low rainfall zone. Northern Bihar generally falls within the medium rainfall category. Eastern Rajasthan, however, is considered a low rainfall zone rather than scanty, as scanty rainfall is typically reserved for the arid regions of Western Rajasthan and Ladakh.

34. (A) I, II, III and V only
The Northeast Monsoon is a crucial weather system for Southeast India. It becomes established by late October, bringing vital rainfall to coastal Tamil Nadu and Andhra Pradesh. These winds pick up moisture from the Bay of Bengal. While it often produces cyclonic storms, it only accounts for a small fraction of India's total annual rainfall, unlike the Southwest Monsoon.

35. (A) Gradual process starting from northwestern India in early September
The withdrawal of the Southwest monsoon is a gradual and systematic process. It begins in the northwestern parts of India, such as Rajasthan, during the first week of September. As the season transitions, the high-pressure system over the land strengthens, pushing the monsoon winds southward. This retreat continues through October until the system completely leaves the Indian mainland in December.

36. (A) P-III, Q-IV, R-II, S-I
Specific geographic features dictate local rainfall patterns. Cherrapunji receives massive precipitation due to its funnel-shaped valley which traps moisture. Jaisalmer experiences scanty rainfall because it is located in the Thar Desert. Mangaluru is on the windward side of the Western Ghats, receiving high rainfall. Madurai is situated in the rain shadow region, which limits its annual precipitation totals.

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37. (B) Low rainfall due to location on the leeward side of a mountain range
A rain shadow region is defined by its position on the leeward side of a mountain range. As moist air is forced over the mountains, it loses its moisture on the windward side through orographic rain. The air that reaches the leeward side is dry and undergoes adiabatic warming, which inhibits cloud formation and results in significantly lower rainfall levels.

38. (C) Funnel-shaped Khasi Hills forcing moisture-laden winds to condense
Mawsynram's extraordinary rainfall is primarily caused by its unique topography. It is located in the Khasi Hills, which have a distinct funnel shape. When moisture-laden winds from the Bay of Bengal strike these hills, they are forced to rise abruptly. This rapid ascent causes the air to cool and condense, resulting in continuous and exceptionally heavy precipitation throughout the season.

39. (D) Tamil Nadu
Most of India receives its maximum rainfall during the Southwest monsoon season. States like Kerala, West Bengal, and Maharashtra experience heavy precipitation as the monsoon winds sweep across the land. Tamil Nadu is an exception; it remains relatively dry during this period because it lies in the rain shadow of the Western Ghats, receiving its main rainfall from the Northeast monsoon.

40. (A) Southeastern peninsula
The Northeast monsoon, often referred to as the winter monsoon, primarily influences the southeastern peninsula of India. As the winds blow from the northeast across the Bay of Bengal, they pick up moisture and bring rainfall to regions such as coastal Tamil Nadu, Puducherry, and parts of Andhra Pradesh. This is the main rainy season for these specific areas.

41. (B) Mawsynram
Mawsynram, located in the East Khasi Hills district of Meghalaya, holds the record for the highest average annual rainfall on Earth. It surpasses Cherrapunji due to its specific geographic alignment that traps and lifts moisture-laden winds from the Bay of Bengal. These winds undergo intense orographic lifting, leading to massive precipitation amounts that exceed ten thousand millimeters annually.

42. (A) I and II only
The hot dry weather season in India typically lasts from March to May. During this time, temperatures rise steadily across the subcontinent due to the apparent northward movement of the sun towards the Tropic of Cancer. This season is characterized by intense heat and dry conditions. Widespread rainfall is not a feature of this period; it usually occurs during the monsoon.

43. (B) Both A and R are true but R is not the correct explanation of A.
Western Disturbances are shallow cyclonic depressions that originate in the Mediterranean region and enter India from the northwest. They bring essential winter rainfall to states like Punjab and Haryana. This precipitation is critically important for the growth of Rabi crops, particularly wheat. While both statements are factual, the importance to crops is a consequence rather than a cause.

44. (A) P-II, Q-I, R-IV, S-III
India experiences four distinct meteorological seasons. The winter season is characterized by clear skies and cold waves. The summer season brings intense heat and the dry Loo winds. The Southwest monsoon provides the majority of the annual rainfall with high humidity. Finally, the retreating monsoon season is known for the transition period of October heat and tropical cyclones in the Bay.

45. (D) Loo
The Loo is a strong, gusty, hot, and dry summer wind that blows during the day over Northern and Northwestern India. It is most prevalent during the months of May and June. Direct exposure to these winds can be extremely hazardous to human health, often leading to heatstroke. It is a localized weather phenomenon resulting from intense solar heating of the land.

46. (A) 1, 4, 2, 3
Rainfall in India varies drastically by region. The Khasi Hills receive the highest rainfall globally. The Brahmaputra Valley follows with high totals. The Ganga Basin, including Delhi, receives moderate rainfall as the monsoon winds lose

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moisture moving westward. Western Rajasthan, represented by Jaisalmer, receives the lowest rainfall because it is located in the arid Thar Desert region.

47. (B) Western Disturbances - Originates in the Bay of Bengal
Various seasonal weather events are correctly linked to their timing or origin. Loo occurs in summer, and October Heat happens during the retreating monsoon. Mango showers are pre-monsoon rains. However, Western Disturbances do not originate in the Bay of Bengal; they are cyclonic storms that form over the Mediterranean Sea and travel eastward across West Asia to reach India.

48. (A) I, II and III only
Western Disturbances are winter weather systems that originate in the Mediterranean Sea. They are carried into India by the subtropical westerly jet stream. These systems are responsible for winter rains in the plains and essential snowfall in the Himalayas. However, they are not related to Kharif crops, which are summer-sown; instead, they provide vital moisture for the winter-grown Rabi crops.

49. (A) Continuous and heavy precipitation throughout the year in the interior peninsula
Rainfall in India is highly seasonal and unevenly distributed. The majority of precipitation occurs during the four months of the Southwest monsoon. Winter is generally dry for most of the country, except for parts of the north and the southeast coast. Interior peninsular regions do not receive continuous heavy rain throughout the year; they experience distinct wet and dry seasons instead.

50. (A) Both A and R are true and R is the correct explanation of A.
Western Disturbances enter India from the northwest and travel eastward across the northern plains. As these cyclonic depressions move away from their source and over land, they gradually lose their moisture content. Consequently, the amount of rainfall they provide decreases significantly from west to east. This explain why Punjab receives more winter rain from these systems than eastern regions.

51. (A) Winter, Hot Weather, Southwest Monsoon, Retreating Monsoon
The India Meteorological Department officially recognizes four major seasons in a calendar year. The cycle begins with the cold winter season (January-February), followed by the hot weather summer season (March-May). The Southwest monsoon season brings heavy rains from June to September. The year concludes with the retreating monsoon season in October and November, which transitions the country back into winter.

52. (D) The Subtropical Westerly Jet Stream
Western Disturbances are steered into the Indian subcontinent by high-altitude winds known as the subtropical westerly jet stream. These jet streams flow from west to east in the upper atmosphere. During winter, they shift southward, which allows them to carry Mediterranean cyclonic depressions toward the northwestern parts of India. This atmospheric mechanism is crucial for the arrival of winter precipitation.

53. (B) Gujarat and Eastern Rajasthan - Medium rainfall zone
Rainfall zones are classified based on the quantity of annual precipitation. The Western coast is a high rainfall zone, and Northeast India is exceptionally wet. The Deccan Plateau generally receives low rainfall. However, Gujarat and Eastern Rajasthan are correctly classified as medium rainfall zones, receiving between 100 cm and 200 cm, which is sufficient for certain types of agriculture.

54. (A) I, II, III and IV only
The retreating monsoon is a transition period marked by the weakening of the monsoon trough and its southward shift. The weather becomes clear, but high temperatures and humidity create "October heat." This season is also characterized by the frequent development of destructive tropical cyclones in the Bay of Bengal. However, it does not bring maximum rainfall to the western coast.

55. (D) La Nina is typically associated with a stronger and wetter Southwest monsoon
Global atmospheric and oceanic phenomena significantly influence the Indian monsoon. A strong El Nino event is often associated with

below-normal rainfall and droughts. Conversely, La Nina typically enhances the Southwest monsoon, leading to higher rainfall amounts and wetter conditions across the subcontinent. Other factors like the Indian Ocean Dipole also interact with these systems to determine overall performance.

56. (A) P-IV, Q-I, R-II, S-III
The India Meteorological Department divides the year into four distinct seasons based on months. Winter occurs during January and February. The hot weather summer season spans from March to May. The Southwest monsoon, which provides the bulk of annual rain, lasts from June to September. Finally, the retreating monsoon season, a time of transition, covers the months of October to December.

57. (B) Intense insolation and scorching Loo winds
During the hot dry weather season, the northern plains of India experience extreme climatic discomfort. This is primarily due to intense solar radiation (insolation) and the prevalence of Loo winds. These scorching, dry winds blow during the peak afternoon hours, causing rapid dehydration and heat-related illnesses. The absence of humidity during this period prevents the cooling effect of perspiration, increasing stress.

58. (B) Benefit to Rabi crops like wheat in Northwestern India
Western Disturbances play a vital role in the agricultural economy of Northwestern India. These winter cyclonic storms bring moderate rainfall to states like Punjab and Haryana. This precipitation is essential for the cultivation of Rabi crops, especially wheat, as it provides necessary moisture during the growing phase. Without this rainfall, irrigation requirements would increase significantly, impacting crop yields and farmer livelihoods.

59. (A) Widespread occurrence of Loo winds
The transition period in October and November is marked by the withdrawal of the monsoon, clear skies, and a high diurnal range of temperature. Cyclonic depressions often form in the Andaman Sea and strike the east coast. However, Loo winds are not a feature of this season; they are exclusively summer phenomena that occur in the northern plains during May and June.

60. (D) Scanty rainfall zone
Leh, situated in the high-altitude cold desert of Ladakh, falls under the scanty rainfall category. Because it is located in the rain shadow of the massive Himalayan ranges, the moisture-laden monsoon winds cannot reach the region. Consequently, the area receives very little precipitation throughout the year, mostly as light snow during the winter, making it a desert environment.

61. (B) 2016
Cyclone Vardah was a severe cyclonic storm that formed in the Bay of Bengal in December 2016. It made landfall near Chennai, Tamil Nadu, bringing extremely high wind speeds and heavy rainfall to the coastal districts. The storm caused significant damage to infrastructure, power lines, and trees across the city. It remains one of the most intense cyclones to strike Chennai.

62. (A) I and II only
The formation of tropical cyclones requires specific environmental conditions. A sea surface temperature of at least 27°C provides the necessary energy through latent heat. Additionally, the Coriolis force is required to initiate the rotation of the cyclonic vortex. Cyclones cannot form directly at the equator because the Coriolis force is zero there, preventing the development of a low-pressure center's rotation.

63. (A) Both A and R are true and R is the correct explanation of A.
The Bay of Bengal is statistically more prone to tropical cyclones than the Arabian Sea. This higher frequency is attributed to its higher sea surface temperatures, which fuel storm development. Furthermore, the Bay of Bengal often receives the remnants of typhoons that originate in the South China Sea, which then re-intensify over the warm waters. These factors make the east coast vulnerable.

64. (A) P-IV, Q-III, R-II, S-I
Tamil Nadu has been frequently impacted by severe cyclones over the last decade. Cyclone Vardah struck in 2016, followed by Cyclone Gaja in 2018. More recently, Cyclone Nivar made

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landfall in 2020, and Cyclone Mandous affected the coast in 2022. Each of these events brought heavy rainfall and significant wind damage to various coastal and interior districts of the state during the monsoon.

65. (A) Intense low-pressure system with inward spiraling winds
A tropical cyclone is defined as an intense low-pressure weather system that forms over warm tropical oceans. It is characterized by strong winds that spiral inward toward a central core. The system is fueled by the latent heat of condensation released as moist air rises and cools. These storms are known for bringing torrential rain, high wind speeds, and dangerous storm surges.

66. (A) 4, 3, 1, 2
The sequence of major cyclones affecting Tamil Nadu began with Vardah in December 2016. Following this, Cyclone Gaja occurred in November 2018. The next significant event was Cyclone Nivar in November 2020. The most recent in this list is Cyclone Mandous, which struck the coast in December 2022. This timeline reflects the high vulnerability of the state during the retreating monsoon.

67. (A) Madhya Pradesh - Vulnerability to coastal storm surges
Coastal states like Tamil Nadu, Odisha, and West Bengal are highly vulnerable to tropical cyclones due to their location along the Bay of Bengal. They frequently experience landfalls and storm surges. In contrast, Madhya Pradesh is an interior, landlocked state. It is not vulnerable to coastal storm surges or direct cyclonic landfall, although it may receive heavy rainfall from storm remnants.

68. (A) I, II and IV only
Tropical cyclones have devastating effects on India's east coast. They generate massive storm surges that lead to the inundation of low-lying coastal areas. The associated torrential rains often cause flash floods, while high winds destroy infrastructure and standing crops. These storms are actually most frequent during the retreating monsoon season, contrary to the idea that they are absent during that period.

69. (B) Only India has the authority to name all cyclones originating in the Bay of Bengal
The naming of cyclones in the North Indian Ocean is a collaborative effort involving several nations. Member countries of the WMO/ESCAP panel, including India, Bangladesh, and the UAE, contribute names to a rotational list. This system ensures clarity for public safety and disaster management. India does not have sole authority; names like Mandous were provided by other member nations like the UAE.

70. (A) Both A and R are true and R is the correct explanation of A.
Tropical cyclones derive their immense energy from the latent heat of condensation, which is released from warm ocean water. Once a cyclone moves over land, this primary moisture and energy source is cut off. Additionally, increased surface friction over the land causes the winds to slow down. Consequently, the low-pressure system loses its intensity and weakens rapidly after making landfall.

71. (A) Low Pressure Area, Depression, Deep Depression, Cyclonic Storm
A tropical weather system undergoes a specific sequence of intensification stages based on wind speed. It typically begins as a low-pressure area. If the system strengthens, it becomes a depression, and then a deep depression as wind speeds increase further. Once the sustained wind speeds reach a specific threshold, the India Meteorological Department officially classifies the system as a cyclonic storm.

72. (A) Calm, clear conditions with lowest atmospheric pressure
The eye of a tropical cyclone is its central core, characterized by remarkably calm conditions. In this region, winds are light and skies are often clear or only lightly clouded. The atmospheric pressure at the surface is at its lowest within the eye. Surrounding this calm center is the eyewall, which contains the most violent winds and heaviest rainfall of the entire storm.

73. (B) Cyclone Gaja (2018) - Cauvery delta districts
Recent cyclones have had specific regional impacts across the east coast. Cyclone Gaja in 2018 caused immense damage to the Cauvery delta districts, particularly Thanjavur and Nagapattinam. In

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contrast, Cyclone Vardah affected Chennai, and Nivar impacted northern Tamil Nadu and Puducherry. These events demonstrate the varied geographical vulnerability of the coastline to the differing paths taken by each unique system.

74. (C) I, II, III, IV and V
Several atmospheric and oceanic conditions must coincide for a tropical cyclone to form and intensify. These include warm sea surface temperatures above 27°C to provide energy. The Coriolis force is necessary for rotation. Minimal vertical wind shear allows the storm structure to remain intact. Additionally, a pre-existing low-pressure area and upper-level divergence are required to sustain the rising air.

75. (A) Landfall near Mamallapuram with rain for northern Tamil Nadu
Cyclone Mandous was a significant weather event that occurred in December 2022. It formed in the Bay of Bengal and moved toward the southern coast of India. The storm made landfall near Mamallapuram in Tamil Nadu. It brought heavy to very heavy rainfall to the northern districts of the state, including Chennai, causing localized flooding and infrastructure damage before weakening.

76. (A) P-II, Q-III, R-I, S-IV
Each coastal state in India is associated with a specific named stretch of coastline. Tamil Nadu lies along the Coromandel Coast, while Andhra Pradesh corresponds to the Northern Circars. Odisha is situated along the Utkal Coast. On the western side, Gujarat is defined by the Kathiawar Coast. These regions are all vulnerable to different types of marine and atmospheric hazards.

77. (D) Gaja
Cyclone Gaja, which occurred in November 2018, is remembered for its devastating impact on the agricultural heartland of Tamil Nadu. It crossed the coast near Vedaranyam, striking the delta districts with extreme force. The storm decimated coconut groves and fruit plantations in Nagapattinam, Thanjavur, and Tiruvarur. Its unusual path and intensity inland caused long-term economic hardship for the farming communities.

78. (C) Inundation of low-lying areas by storm surges
Historically, the primary cause of high mortality rates during tropical cyclones is the occurrence of storm surges. A storm surge is a rapid rise in sea level caused by the storm's low pressure and strong winds pushing water onto the land. This leads to the sudden inundation of low-lying coastal areas, drowning residents and destroying homes before they can be evacuated.

79. (B) Karnataka
While all coastal states face some risk, the frequency of severe tropical cyclones is much higher in the Bay of Bengal than in the Arabian Sea. Consequently, east coast states like Odisha, Andhra Pradesh, and West Bengal are highly prone to frequent impacts. Karnataka, located on the western coast along the Arabian Sea, is statistically less likely to experience severe cyclones.

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80. (D) Disaster Mitigation
Disaster mitigation involves long-term measures designed to reduce the risk and impact of a disaster before it occurs. The construction of multi-purpose cyclone shelters provides safe havens for vulnerable populations. Similarly, creating bio-shields through mangrove plantations helps absorb the energy of storm surges and winds. These proactive strategies are essential components of a comprehensive disaster management plan to protect lives.

81. (B) Three
The National Disaster Management Authority and meteorological organizations generally classify drought into three primary categories based on their origin and impact. These are meteorological drought, which is related to rainfall deficiency; agricultural drought, which involves soil moisture stress; and hydrological drought, which pertains to declining water levels in reservoirs and aquifers. Understanding these types is crucial for implementing relief strategies.

82. (C) III only
Drought is a complex phenomenon with various stages. Meteorological drought is indeed caused by inadequate rainfall, and agricultural drought relates to soil moisture levels affecting crops. However, hydrological drought is not defined by two dry days. Instead, it is a long-term condition

characterized by the significant depletion of surface and subsurface water resources following a prolonged period of rainfall deficiency.

83. (A) Both A and R are true and R is the correct explanation of A.
Ramanathapuram is one of the most drought-prone districts in Tamil Nadu. Its high vulnerability is due to its location in the rain shadow of the Western Ghats, which limits rainfall during the Southwest monsoon. Additionally, the district relies heavily on the Northeast monsoon, which is characterized by high inter-annual variability. These factors lead to frequent and severe water shortages.

84. (A) P-II, Q-IV, R-I, S-III
Droughts are defined by their specific impacts on the environment and society. Meteorological drought refers to a significant shortfall in regional precipitation. Agricultural drought involves soil moisture stress that leads to crop failure. Hydrological drought is marked by a decline in water levels in reservoirs and aquifers. Socio-economic drought occurs when the demand for economic goods exceeds supply due to water shortfalls.

85. (B) Depletion of surface water bodies and groundwater reservoirs
Hydrological drought is characterized by a significant and prolonged depletion of water in various storage systems. This includes the falling levels of surface water in rivers, lakes, and reservoirs, as well as the reduction of groundwater in aquifers. It usually manifests after a period of meteorological drought when the lack of rainfall begins to affect overall availability of water resources.

86. (A) 2, 4, 1, 3
Drought typically follows a predictable chronological sequence. It begins with meteorological drought, which is a simple deficiency in rainfall. If the lack of rain persists, it leads to agricultural drought as soil moisture dries up, affecting crops. This is followed by hydrological drought as water levels in reservoirs and aquifers drop. Finally, socio-economic drought occurs as these shortages impact goods.

87. (D) Virudhunagar - Chronically drought prone
Several districts in Tamil Nadu are classified as drought-prone due to erratic rainfall and geographical factors. Virudhunagar is a prime example of a chronically drought-prone district, frequently facing agricultural and water crises. In contrast, districts like Kanyakumari and the Nilgiris receive higher rainfall and are less vulnerable. Chennai faces water shortages but is primarily categorized by its urban flooding.

88. (A) I, II and III only
The devastating Chennai floods of 2015 resulted from a combination of factors. Extremely heavy rainfall from the Northeast monsoon provided the initial volume of water. Rapid urbanization led to the encroachment of natural wetlands and floodplains, reducing the city's drainage capacity. The situation was further aggravated by the sudden and massive release of excess water from the Chembarambakkam reservoir.

89. (B) Flooding in Indian cities only occurs during the Southwest monsoon season
Urban flooding is often a man-made disaster caused by inadequate drainage and the destruction of natural water bodies. While many areas in India flood during the Southwest monsoon, Tamil Nadu and its cities like Chennai are most vulnerable during the Northeast monsoon season. Cyclones and intense seasonal downpours are the main triggers. The 2015 events underscored the necessity of urban preservation.

90. (A) Both A and R are true and R is the correct explanation of A.
Chennai has seen an increase in the frequency of urban flooding due to rapid and unplanned expansion. As the city grows, natural drainage channels and wetlands have been built over with concrete and asphalt. This reduced permeability prevents rainwater from soaking into the ground or flowing into natural outlets. Consequently, even moderate rainfall can quickly overwhelm the remaining drainage systems.

91. (B) Preparedness, Response, Recovery, Mitigation
The disaster management cycle follows a standard logical sequence of phases. It begins with preparedness, which involves planning and training before a flood occurs. The response phase includes immediate actions taken during

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the event to save lives. Recovery involves restoring services and rebuilding after the water recedes. Finally, mitigation focuses on long-term structural and non-structural measures to reduce the impact.

92. (C) Crop failure and distress migration of laborers
A prolonged agricultural drought in the interior districts of Tamil Nadu has direct and severe consequences. The lack of soil moisture leads to widespread crop failure, destroying the primary source of income for local farmers. This economic hardship often triggers distress migration, where laborers and small-scale farmers move to urban areas in search of work. Such droughts also result in fodder shortages.

93. (D) Western Rajasthan - Annual riverine floods
Flood vulnerability varies by geography. The Brahmaputra Valley is highly prone to riverine floods, while coastal Odisha and Andhra Pradesh face storm surge flooding from cyclones. However, Western Rajasthan is an arid region characterized by scanty rainfall and desert conditions. It is not prone to annual riverine floods; instead, it more frequently faces severe drought conditions due to lack of rivers.

94. (B) I, II, III and IV only
The 2015 floods in Chennai had catastrophic impacts on the city's infrastructure and population. Power and communication networks were severely disrupted for days. Operations at the Chennai International Airport were halted due to the flooding of the runways. Thousands of residents in low-lying areas were displaced, and the contamination of water sources posed significant health risks. Adyar River did not shift.

95. (B) Ramanathapuram, Virudhunagar, and Dindigul fall under this category
According to standard vulnerability assessments, several districts in Tamil Nadu are identified as chronically drought-prone. These include Ramanathapuram, Virudhunagar, and Dindigul, which often experience erratic rainfall and significant water stress. In contrast, the delta districts like Thanjavur are primarily affected by seasonal water availability from rivers, and the Western Ghats regions receive much higher annual rainfall totals.

96. (A) P-II, Q-IV, R-III, S-I
Different districts in Tamil Nadu face unique disaster risks. Chennai is highly vulnerable to urban flooding and coastal inundation. Ramanathapuram is chronically drought-prone due to its location in the rain shadow. Nagapattinam is a high-risk area for cyclonic storms and storm surges. The Nilgiris district, with its steep mountainous terrain, frequently experiences landslides during periods of heavy and prolonged monsoon rainfall.

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97. (A) Virudhunagar
Virudhunagar is distinctly characterized by low and highly erratic rainfall patterns. This unpredictability leads to frequent and severe drought conditions, which significantly impact the district's agricultural productivity. Because it receives limited benefit from both the Southwest and Northeast monsoons, the region often faces water scarcity for both irrigation and domestic use. This makes it one of the most vulnerable interior districts.

98. (C) Protecting and desilting urban wetlands and drainage channels
The 2015 Chennai floods provided a critical lesson regarding urban planning and environmental management. It highlighted the essential need to protect and regularly desilt urban wetlands, lakes, and natural drainage channels. These areas act as vital sponges and conduits for excess rainwater. Preserving these ecosystems and preventing further encroachment is more effective and sustainable than purely structural solutions like higher walls.

99. (A) Cuddalore
While several districts in Tamil Nadu are chronically drought-prone, Cuddalore is generally an exception. Located on the coast, it is more frequently affected by floods and tropical cyclones during the monsoon seasons. Districts like Ramanathapuram, Virudhunagar, and Dindigul are situated in the interior rain shadow regions and face much higher risks of prolonged drought and agricultural water stress.

100. (D) Drought mitigation
Strategies such as watershed management and rainwater harvesting are designed to improve water conservation and storage at the local

level. Crop diversification helps farmers reduce their reliance on water-intensive crops, making them more resilient to rainfall variations. These measures are primary components of drought mitigation. They aim to reduce the vulnerability of communities to water scarcity and ensure sustainable water usage.

101. (B) 40°C
The India Meteorological Department officially declares a heat wave in the plains when the maximum temperature of a station reaches at least 40°C. For coastal regions, the threshold is 37°C, and for hilly regions, it is 30°C. Additionally, the temperature must be significantly higher than the normal average for that time of year to be classified as a severe event.

102. (C) I and III only
Tamil Nadu possesses a tropical climate due to its equatorial proximity. Coastal regions experience moderate temperatures and a lower annual range than interior districts because of the maritime influence. However, unlike most of India, Tamil Nadu does not receive the bulk of its rainfall from the Southwest monsoon; instead, it relies primarily on the Northeast monsoon for its annual precipitation.

103. (A) Both A and R are true and R is the correct explanation of A.
Northern India is susceptible to severe cold waves during the winter months. This is due to its continental location, which is far removed from the moderating influence of the ocean. Additionally, the region experiences the descent of cold, dry winds from the snow-covered Himalayan mountains. These combined factors lead to a sharp drop in temperatures, often accompanied by dense fog.

104. (A) P-I, Q-II, R-III, S-IV
Different weather events are characteristic of specific Indian regions and times. Dense winter fog is common in the Indo-Gangetic Plains during December and January. Severe heat waves typically affect Central and Northwestern India in May and June. Pre-monsoon thunderstorms occur in West Bengal and Kerala in April. The Northeast monsoon provides vital rainfall to the coastal districts of Tamil Nadu.

105. (B) October to December
The primary rainy season for Tamil Nadu is the Northeast monsoon, which occurs from October to December. During this period, moisture-laden winds from the Bay of Bengal bring the majority of the state's annual rainfall. This season is essential for the state's agriculture and water reservoirs, as the preceding Southwest monsoon is largely blocked by the Western Ghats rain shadow.

106. (A) 2, 3, 1
A thunderstorm progresses through three distinct stages in its life cycle. It starts with the cumulus stage, where warm, moist air rises and develops into a cloud. This is followed by the mature stage, characterized by strong updrafts, downdrafts, and the occurrence of rain and lightning. Finally, the dissipating stage occurs when the updrafts stop and the storm slowly weakens.

107. (A) Retreating monsoon season - Primary cyclone season for the east coast
In Tamil Nadu, the retreating monsoon season is a significant period for weather events. It serves as the primary season for cyclonic activity along the east coast. While other parts of India receive maximum rain during the Southwest monsoon, coastal Tamil Nadu relies on the later part of the year. Severe heat waves are summer phenomena, and winter snow is absent.

108. (A) I, II and III only
The Nilgiris district has a unique microclimate compared to the surrounding Tamil Nadu plains. Due to its high altitude, it experiences significantly cooler temperatures throughout the year. Fog and mist are frequent, especially during the monsoon and winter seasons. The region is also notable for receiving rainfall from both the Southwest and Northeast monsoons, supporting its diverse and lush mountain ecosystems.

109. (D) The hill stations in the Western Ghats record the highest temperatures in the state during May
Tamil Nadu's temperature varies between coastal and interior regions. Coastal areas are moderated by sea breezes, while interior districts like Vellore face high summer heat. The diurnal range is typically higher inland. However, hill stations in the Western Ghats, such as Ooty, do not record the state's highest summer temperatures.

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Instead, they provide a cool refuge with much lower readings.

110. (A) Both A and R are true and R is the correct explanation of A.
Chennai maintains a relatively equable climate without extreme seasonal temperature changes. This stability is primarily due to its coastal location. The daily cycle of sea and land breezes acts as a natural air conditioning system, bringing cooler maritime air to the city during the day and preventing extreme heat. This moderating influence keeps the temperature range narrow throughout the year.

111. (A) Southwest Monsoon, Northeast Monsoon, Winter, Pre-monsoon
The seasonal cycle in Tamil Nadu traditionally follows a specific order starting from the middle of the year. The Southwest monsoon occurs from June to September. This is followed by the Northeast monsoon from October to December, which is the state's main rainy season. Winter follows in January and February, and the pre-monsoon summer period occurs from March until the next cycle.

112. (D) Replacement of natural cover with dense heat-retaining materials
The Urban Heat Island effect in cities like Chennai is caused by the modification of the natural environment. Dense urban surfaces like concrete, asphalt, and steel absorb and retain more solar heat than soil and vegetation. Additionally, the lack of trees reduces evaporative cooling. Waste heat from vehicles and air conditioners further contributes to significantly higher temperatures in urban centers.

113. (A) Lowest summer temperatures - Vellore
Tamil Nadu's geography results in varied climate features. Chennai experiences coastal moderation and the Urban Heat Island effect. Coimbatore also shows UHI characteristics. Ooty is known for its cool mountain microclimate. However, Vellore is famous for having some of the highest summer temperatures in the state, rather than the lowest. It frequently experiences intense heat due to its inland location.

114. (B) I, II, IV and V only
Heat waves are dangerous weather events that pose severe risks to human health, particularly for the elderly and outdoor workers. They increase the demand for cooling, which can strain power grids. Heat waves are summer phenomena, occurring from March to June, not in winter. To manage these risks, the IMD issues color-coded alerts to warn about impending extreme heat conditions.

115. (A) Afternoon sea breeze bringing cooler temperatures to coastal cities
Sea and land breezes are important local wind patterns in coastal Tamil Nadu. During the day, the land heats up faster than the ocean, causing cooler air from the sea to blow inland in the afternoon. This sea breeze provides a welcome moderating effect on coastal temperatures. At night, the process reverses as the land cools faster, resulting in a breeze toward the sea.

116. (A) P-IV, Q-II, R-I, S-III
Different areas of Tamil Nadu exhibit unique climatic traits. The Nilgiris are characterized by fog, mist, and cold winters. Chennai experiences an equable coastal climate affected by urban development. Vellore is known for its intense interior summer heat. Kanyakumari, located at the southern tip of the peninsula, is unique because it receives significant rainfall from both the Southwest and Northeast monsoons.

117. (B) Nighttime radiational cooling causing winter frost in valleys
A distinctive feature of the Nilgiris microclimate is the occurrence of winter frost in its valleys. During the winter months, clear skies lead to intense nighttime radiational cooling. The cold air, being denser, sinks into the valley floors, causing temperatures to drop below freezing and creating frost. This phenomenon is localized to the high-altitude terrain and significantly influences the local flora and plantations.

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118. (C) Convective solar heating leading to charge separation in clouds
During the pre-monsoon season, intense solar heating of the land causes strong convective updrafts. These updrafts carry moist air high into the atmosphere, forming large cumulonimbus clouds. The interaction of ice crystals and

water droplets within these clouds leads to the separation of electrical charges. The resulting discharge of electricity between clouds or to the ground manifests as the frequent lightning seen.

119. (D) Extensive coverage of mangrove forests within the city
The Urban Heat Island effect in Chennai is driven by several factors, including the high density of heat-absorbing concrete and asphalt, waste heat from human activities, and the obstruction of airflow by tall buildings. However, the presence of mangrove forests is not a contributing factor. In fact, urban greenery and forests help mitigate the UHI effect by providing shade and cooling through evapotranspiration.

120. (A) Dependence on the erratic Northeast monsoon and cyclonic systems
Tamil Nadu's high inter-annual rainfall variability is primarily due to its heavy reliance on the Northeast monsoon and cyclonic systems. These weather patterns are less stable and more unpredictable than the Southwest monsoon. The amount of rainfall received often depends on the formation and path of tropical depressions in the Bay of Bengal, which can vary significantly from one year to the next.

121. (A) 1875
The India Meteorological Department (IMD) was established in 1875 following a series of devastating cyclones and famines in the late nineteenth century. It was created to provide a systematic and scientific approach to weather observation and forecasting in India. Over the decades, it has evolved into a premier organization under the Ministry of Earth Sciences, managing meteorological observations, forecasting, and seismology.

122. (A) I and II only
The India Meteorological Department performs several vital functions for the nation. It provides essential meteorological data used by diverse sectors, including agriculture, aviation, and water resource management. The IMD is also responsible for issuing early warnings against hazardous weather phenomena such as tropical cyclones, heavy rains, and heat waves. However, the department does not manage the construction of dams or irrigation.

123. (A) Both A and R are true and R is the correct explanation of A.
The occurrence of an El Nino event is statistically linked to a weaker Southwest monsoon in India. During El Nino, the warming of the central and eastern Pacific Ocean alters global atmospheric pressure and wind patterns. This disruption weakens the trade winds and the low-pressure system over the Indian landmass, reducing the moisture influx. Consequently, El Nino often results in deficient rainfall.

124. (A) P-IV, Q-III, R-II, S-I
Modern weather forecasting utilizes a variety of specialized tools. Doppler Weather Radars are used for real-time detection of precipitation and storm structures. Satellite imagery, such as from the INSAT series, tracks large-scale cloud cover and cyclones. Radiosondes measure vertical profiles of temperature and humidity in the atmosphere. Anemometers are standard instruments used to measure wind speed at the surface for local observations.

125. (D) Sea surface temperature differences between Indian Ocean sectors
The Indian Ocean Dipole is a coupled ocean-atmosphere phenomenon characterized by sea surface temperature differences between the western and eastern sectors of the tropical Indian Ocean. In its positive phase, the western Indian Ocean becomes warmer than the eastern part. This temperature gradient significantly influences the moisture supply and intensity of the monsoon winds, affecting rainfall patterns across the Indian subcontinent.

126. (A) 2, 4, 1, 3
Weather forecasts are categorized based on their time scales. Nowcasting is the shortest, covering a period of just a few hours. Short-range forecasts extend up to three days. Medium-range forecasts cover three to ten days into the future. Long-range forecasts, often used for seasonal predictions like the monsoon outlook, cover periods beyond ten days and typically focus on monthly or seasonal averages.

127. (B) La Nina - Associated with a stronger Southwest monsoon
Global phenomena have predictable impacts on the Indian monsoon. A La Nina event is

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generally associated with a stronger Southwest monsoon and above-normal rainfall. In contrast, El Nino usually leads to weaker monsoon winds and drought. A Positive Indian Ocean Dipole is typically beneficial for monsoon rainfall. Negative IOD events are often detrimental, potentially reducing precipitation levels over western India.

128. (B) I, II and IV only
El Nino involves the abnormal warming of sea surface temperatures in the equatorial Pacific. This warming weakens the trade winds, disrupting the normal transport of warm water toward Asia. This shift alters global atmospheric circulation, significantly impacting the Indian monsoon by weakening its intensity. While it brings heavy rain to South America, it is associated with droughts in Australia and Indonesia.

129. (A) Weather forecasting relying entirely on manual ground-based observations
India's weather forecasting infrastructure is sophisticated and multi-layered. It is not manual; instead, it integrates ground-based observations with a network of Doppler Weather Radars and satellite imagery from the INSAT series. This technological integration allows for real-time monitoring of cyclones and thunderstorms. Additionally, specialized agro-meteorological services use these forecasts to provide timely advice to farmers, helping them manage crops.

130. (A) Both A and R are true and R is the correct explanation of A.
A Positive Indian Ocean Dipole event is generally beneficial for the Indian Southwest monsoon. This occurs when the western part of the Indian Ocean becomes unusually warmer than the eastern part. This temperature difference enhances convective activity over the western ocean, providing a greater supply of moisture to the monsoon winds. Consequently, a Positive IOD can sometimes compensate for El Nino.

131. (A) El Nino, Neutral, La Nina
The El Nino-Southern Oscillation cycle is a natural climate pattern that alternates between three distinct phases. The El Nino phase involves warmer than average ocean temperatures. This is often followed by a neutral phase where temperatures are near the long-term average. Finally, the La Nina phase occurs with colder than average temperatures. This cycle typically repeats every few years, affecting global weather.

132. (D) Enhanced convective activity leading to normal rainfall in Tamil Nadu
A Positive Indian Ocean Dipole influences the Northeast monsoon in Tamil Nadu by enhancing convective activity over the western Indian Ocean. This increased moisture availability generally supports normal to above-normal rainfall during the winter monsoon months. While the relationship is complex and interacts with other global factors like ENSO, a positive IOD phase is typically seen as a favorable condition.

133. (B) Positional astronomy - Predicting the exact path of jet streams
The IMD provides specialized meteorological services for various sectors. Aviation meteorology ensures safe flights, and marine meteorology warns fishermen of hazardous sea conditions. Agrometeorology helps farmers plan agricultural activities. However, the Positional Astronomy Centre is responsible for preparing the Indian Astronomical Ephemeris and the Rashtriya Panchang; it is not involved in predicting the exact paths of high-altitude jet streams.

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134. (A) I, II, III and IV only
Doppler Weather Radars are essential for modern meteorology in India. They track the precise location and intensity of cyclones and estimate real-time rainfall. They are also used for nowcasting severe thunderstorms and detecting dangerous wind patterns like turbulence. However, radar technology is observational and cannot alter or control the path of a cyclone. It is strictly a tool for monitoring and warning.

135. (D) Infrared monitoring of cloud cover and temperatures 24/7
Satellite imagery is a cornerstone of modern weather forecasting. It provides continuous monitoring of the atmosphere, allowing meteorologists to track cloud cover and temperatures 24/7 using infrared sensors. This constant observation is critical for identifying the early formation of tropical cyclones and monitoring their movement over the open ocean. Satellite data complements ground-based observations, offering a comprehensive view of weather.

136. (A) P-II, Q-I, R-III, S-IV
Different oceanic states have varied impacts on the Indian monsoon. A strong El Nino generally suppresses the Southwest monsoon, while a strong La Nina is favorable for normal or above-normal rainfall. A Positive IOD usually enhances the monsoon. A Negative IOD is also influential but is generally considered less dominant than the ENSO cycle in determining the overall performance.

137. (B) Unusually cold ocean temperatures in the Equatorial Pacific
A La Nina event is primarily characterized by unusually cold ocean temperatures in the central and eastern equatorial Pacific. This cooling is the opposite of the warming seen during El Nino. During La Nina, the trade winds strengthen, pushing warm surface water further west toward Asia. This shift in the thermal structure of the ocean significantly alters global atmospheric circulation and usually leads to a stronger monsoon.

138. (B) Real-time data for precise early rainfall and cyclone warnings
Having a Doppler Weather Radar in Chennai provides a major advantage for disaster management in Tamil Nadu. The system offers real-time, high-resolution data on the structure and intensity of precipitation. This allows meteorologists to provide precise early warnings for heavy rainfall and approaching tropical cyclones. Such timely information is critical for urban flood management and ensuring that safety measures are implemented.

139. (A) Regulating the market prices of agricultural commodities
The India Meteorological Department provides a wide range of essential services, including issuing color-coded weather alerts and maintaining the national seismological network. It also provides astronomical data for various national publications. However, the IMD has no role in regulating the market prices of agricultural commodities. This economic function is managed by other government ministries and departments related to food and agriculture.

140. (C) Medium-range forecast
Weather forecasting is categorized based on the duration of the prediction. A forecast that covers a period of 3 to 10 days is classified as a medium-range forecast. This type of prediction is particularly useful for agricultural planning and water resource management. It provides a balance between the high precision of short-range forecasts and the broad outlooks of long-range seasonal predictions.

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CHAPTER 03

Water Resources and River Systems

1. Consider the following statements regarding the National Water Policy 2012:
I. It emphasizes the need to treat water as an economic good to promote its conservation and efficient use.
II. It mandates the inter-linking of all rivers in India by 2030 to ensure uniform water distribution.
III. It recommends the establishment of a standardized national information system with a network of data banks and databases.
Which of the combinations given above is/are correct?
(A) I only
(B) I and II
(C) I and III
(D) III only
(E) Answer not known

2. Which of the following best defines "Watershed Management" in the context of Indian water resources?
(A) The exclusive process of interlinking major perennial rivers to prevent floods.
(B) The process of desalinating seawater to supply drinking water to coastal states.
(C) The mandatory construction of large concrete dams across all Peninsular rivers.
(D) The rational utilization of land and water resources for optimum production with minimum hazard to natural resources.
(E) Answer not known

3. Match the following major dams in List I with their respective rivers in List II:
List I: (Dams)
P. Hirakud Dam
Q. Sardar Sarovar Dam
R. Bhavanisagar Dam
S. Mettur Dam
List II: (Rivers)
I. Cauvery
II. Bhavani
III. Mahanadi
IV. Narmada
(A) P-III, Q-IV, R-II, S-I
(B) P-IV, Q-III, R-I, S-II
(C) P-III, Q-II, R-IV, S-I
(D) P-I, Q-IV, R-II, S-III
(E) Answer not known

4. What is the primary objective of the Jal Jeevan Mission implemented by the Jal Shakti Ministry?
(A) To provide 100% irrigation coverage to all agricultural lands in India by 2025.
(B) To connect all the Himalayan rivers with the Peninsular rivers.
(C) To provide safe and adequate drinking water through individual household tap connections to all rural households.
(D) To ensure zero groundwater extraction for industrial purposes.
(E) Answer not known

5. Given below are two statements, one is labelled as Assertion (A) and the other as Reason (R):
Assertion (A): The Himalayan rivers are perennial in nature and flow throughout the year.
Reason (R): The Himalayan rivers receive water from both rain and melting of glaciers.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

6. Under the Indus Waters Treaty of 1960, the waters of which three rivers were allocated to India for unrestricted use?
(A) Indus, Jhelum, and Chenab
(B) Jhelum, Ravi, and Sutlej
(C) Indus, Beas, and Chenab
(D) Ravi, Beas, and Sutlej

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(E) Answer not known

7. Which of the following is incorrectly matched regarding the origin of Indian river systems?
(A) Ganga - Gangotri Glacier
(B) Godavari - Mahabaleshwar
(C) Brahmaputra - Chemayungdung Glacier
(D) Narmada - Amarkantak Plateau
(E) Answer not known

8. Identify the correct statement regarding the Brahmaputra river system.
(A) It originates in the Western Ghats range and flows directly into the Arabian Sea.
(B) It is known as the Tsangpo in Bangladesh and as the Jamuna in the Tibet region.
(C) It forms the Dihang gorge, the world's deepest, as it enters Indian territory.
(D) It carries no significant flood-related risks for the agricultural lands of Assam.
(E) Answer not known

9. Consider the following statements about the Namami Gange Programme:
I. It is an integrated conservation mission approved as a flagship programme.
II. Its twin objectives are effective abatement of pollution, and conservation and rejuvenation of the National River Ganga.
III. It focuses only on surface cleaning and completely ignores afforestation along the river banks.
IV. The programme involves public participation and riverfront development.
Which of the combinations given above is/are incorrect?
(A) I, II and IV
(B) III only
(C) I, III and IV
(D) II and III
(E) Answer not known

10. Which of the following statements about Peninsular rivers is incorrect?
(A) They exhibit a heavily meandering course and frequently shift their beds.
(B) They are characterized by broad and shallow valleys.
(C) Most of the peninsular rivers are non-perennial and seasonal.
(D) The majority of these rivers flow from west to east and drain into the Bay of Bengal.
(E) Answer not known

11. Select the correct option showing the tributaries of the Godavari river.
(A) Tungabhadra, Koyna, Bhima, Musi
(B) Penganga, Indravati, Pranhita, Manjira
(C) Bhavani, Hemavati, Kabini, Amaravati
(D) Gandak, Kosi, Ghaghara, Gomti
(E) Answer not known

12. Which of the following states is NOT involved in the Krishna Water Disputes?
(A) Maharashtra
(B) Kerala
(C) Karnataka
(D) Andhra Pradesh
(E) Answer not known

13. Consider the following statements regarding the Mahanadi river:
I. It originates from the Sihawa mountain in Chhattisgarh.
II. The Hirakud Dam, one of the longest earth dams in the world, is built across it.
III. It primarily drains the states of Chhattisgarh and Odisha.
IV. Its major tributaries include the Seonath, Jonk, and Hasdeo.
V. It flows westward and empties into the Arabian Sea.
Which of the combinations given above is/are correct?
(A) I, II, III and IV
(B) I, II and V
(C) II, III, IV and V
(D) III, IV and V
(E) Answer not known

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14. Which is the most appropriate description of the Narmada river's course?
(A) It flows east through a U-shaped valley to reach the Bay of Bengal.
(B) It flows north to join the Yamuna as a major right-bank tributary.
(C) It flows west through a rift valley between the Vindhyas and Satpuras.
(D) It originates in the Aravallis and flows through the Thar into Gujarat.
(E) Answer not known

15. Given below are two statements, one is labelled as Assertion (A) and the other as Reason (R):
Assertion (A): The Tapti and Sabarmati are characterized as west-flowing rivers in India.
Reason (R): They flow through rift valleys created by block faulting that slope towards the Arabian Sea.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

16. The concept of creating a tribunal for river water disputes in India is derived from which constitutional provision?
(A) Article 262
(B) Article 280
(C) Article 324
(D) Article 356
(E) Answer not known

17. Match the following rivers of Tamil Nadu in List I with their distinguishing features in List II:
List I: (Rivers)
P. Palar
Q. Vaigai
R. Tamirabarani
S. Amaravati
List II: (Features)
I. Perennial river originating in Agasthyamalai
II. Major tributary of the Cauvery river
III. Originates in Nandi Hills and recharges Chennai groundwater
IV. Originates in Varusanadu Hills and serves Madurai
(A) P-III, Q-IV, R-I, S-II
(B) P-IV, Q-III, R-II, S-I
(C) P-III, Q-I, R-IV, S-II
(D) P-I, Q-IV, R-III, S-II
(E) Answer not known

18. Rainwater harvesting methods in Tamil Nadu are primarily classified into which of the following traditional systems?
(A) Baolis and Johads
(B) Tankas and Khadins
(C) Zabo and Bamboo drip irrigation
(D) Eris, Ooranis, and Kuttai systems
(E) Answer not known

19. Arrange the following rivers of Tamil Nadu in the correct order from North to South:
I. Palar
II. Tamirabarani
III. Vaigai
IV. Pennaiyar
(A) I, IV, III, II
(B) IV, I, III, II
(C) I, III, IV, II
(D) IV, III, I, II
(E) Answer not known

20. Which of the following is correctly matched regarding the Chennai water supply reservoirs?
(A) Chembarambakkam - Across Palar River
(B) Red Hills Lake - Across Vaigai River
(C) Poondi Reservoir - Across Kosasthalaiyar River
(D) Cholavaram - Across Pennaiyar River
(E) Answer not known

21. Consider the following statements regarding the Cauvery river:
I. It originates at Talakaveri in the Brahmagiri range of the Western Ghats in Karnataka.
II. Hemavati, Shimsha, and Arkavathy are its major left-bank tributaries.
III. It forms the Hogenakkal falls before entering Tamil Nadu.
Which of the combinations given above is/are correct?
(A) I and II
(B) I and III
(C) II and III
(D) I, II and III
(E) Answer not known

22. When comparing Himalayan and Peninsular rivers, which of the following highlights a major difference in their utility?
(A) Himalayan rivers provide hydropower, while Peninsular rivers are exclusively for sea navigation.
(B) Peninsular rivers bring silt for the northern plains, unlike the erosion-prone Himalayan rivers.
(C) Peninsular rivers allow for consistent year-round power generation due to their perennial flow.

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(D) Himalayan rivers serve perennial irrigation and navigation; Peninsular rivers are seasonal.
(E) Answer not known

23. Match the following tributaries in List I with their respective main rivers in List II:
List I: (Tributaries)
P. Bhavani
Q. Indravati
R. Tungabhadra
S. Yamuna
List II: (Main Rivers)
I. Ganga
II. Cauvery
III. Godavari
IV. Krishna
(A) P-II, Q-III, R-IV, S-I
(B) P-III, Q-II, R-I, S-IV
(C) P-II, Q-IV, R-III, S-I
(D) P-IV, Q-III, R-II, S-I
(E) Answer not known

24. What is a prominent feature of the Mettur Dam?
(A) It was the first dam in India built for the purpose of generating experimental nuclear power.
(B) It is a massive barrage built to stop salt water intrusion into the vulnerable Cauvery delta.
(C) It is a critical reservoir for delta agriculture, built where the river enters the plains.
(D) It is a major reservoir on the Vaigai river that supplies drinking water to the city of Madurai.
(E) Answer not known

25. Given below are two statements, one is labelled as Assertion (A) and the other as Reason (R):
Assertion (A): The Palar river is vital for the groundwater recharge in the northern districts of Tamil Nadu and the Chennai region.
Reason (R): The Palar river has a highly porous and permeable riverbed that facilitates excellent percolation of floodwaters into aquifers.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

26. The traditional "Eri" system in Tamil Nadu is an example of which category of water management?
(A) Community-managed surface water harvesting and storage
(B) Deep tube well irrigation
(C) Large-scale dam based hydroelectric projects
(D) Industrial wastewater recycling
(E) Answer not known

27. Identify the incorrectly matched pair relating to Tamil Nadu's rivers and their significance:
(A) Vaigai River - Primary water source for Madurai city
(B) Amaravati River - Distributary of the Godavari river
(C) Tamirabarani River - Only perennial river in Tamil Nadu
(D) Cheyyar River - Major tributary of the Palar river
(E) Answer not known

28. Which of the following is least relevant to the Chennai water supply infrastructure?
(A) Poondi Reservoir
(B) Bhavanisagar Dam
(C) Chembarambakkam Lake
(D) Red Hills Reservoir
(E) Answer not known

29. Consider the following statements about the Pennaiyar river:
I. It originates in the Nandi Hills in Karnataka.
II. It flows through Krishnagiri, Dharmapuri, and Cuddalore districts.
III. It merges with the Arabian Sea near Mangalore.
IV. It is a seasonal river that depends entirely on monsoon rains.
Which of the combinations given above is/are correct?
(A) I, II and IV
(B) I and III
(C) II, III and IV
(D) II and IV
(E) Answer not known

30. What can be inferred as the primary cause of the recurrent groundwater crisis in Tamil Nadu?
(A) The state receives uniform and excess

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rainfall throughout the year, causing aquifers to burst.
(B) The expensive process of desalinating seawater to supply municipal drinking water to cities.
(C) Over-extraction for farming and cities paired with unpredictable monsoon patterns.
(D) The complete banning of all tube wells by the state government since the beginning of 2010.
(E) Answer not known

31. Select the correct option showing the evolution of the institutional mechanism for the Cauvery water dispute.
(A) Cauvery Water Disputes Tribunal (CWDT) → Supreme Court Final Verdict → Cauvery Water Management Authority (CWMA)
(B) Cauvery Water Management Authority (CWMA) → CWDT → Supreme Court Final Verdict
(C) Supreme Court Final Verdict → CWDT → Cauvery Water Management Authority (CWMA)
(D) CWDT → Cauvery Water Management Authority (CWMA) → Supreme Court Final Verdict
(E) Answer not known

32. What is the primary advantage of constructing check dams across seasonal rivers in Tamil Nadu?
(A) They generate massive amounts of sustainable hydroelectric power for the local state grid.
(B) They stop the river flow to allow for large-scale commercial navigation in the upstream area.
(C) They slow water flow to enhance recharge and reduce soil erosion.
(D) They prevent the migration of aquatic life to preserve endemic species found in the delta.
(E) Answer not known

33. Consider the following statements regarding the Tamil Nadu Water Supply and Drainage (TWAD) Board:
I. It was formed to provide safe drinking water and sewerage facilities to the entire state.
II. Its jurisdiction explicitly excludes the Chennai Metropolitan Area.
III. It implements combined water supply schemes using major rivers.
IV. It enforces the mandatory rainwater harvesting regulations in rural areas.
V. It is directly controlled by the Union Jal Shakti Ministry.
Which of the combinations given above is/are correct?
(A) I, II, III and IV
(B) I, II and III
(C) II, III, IV and V
(D) I, III and V
(E) Answer not known

34. Which of the following is the defining feature of the "Kudimaramathu" scheme in Tamil Nadu?
(A) State-funded desalinization of seawater for the benefit of all coastal districts in the state.
(B) Privatization of all minor irrigation tanks to increase revenue generation for the government.
(C) Construction of large concrete dams across all east-flowing rivers to store monsoon water.
(D) Community participation in maintaining and restoring local water bodies.
(E) Answer not known

35. Given below are two statements, one is labelled as Assertion (A) and the other as Reason (R):
Assertion (A): The "Day Zero" scare in Chennai highlighted the extreme vulnerability of urban water management.
Reason (R): The four major reservoirs supplying water to Chennai completely dried up due to deficient northeast monsoons and over-extraction of groundwater.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

36. In which year was the Ministry of Jal Shakti formed by integrating the Ministry of Water Resources, River Development and Ganga Rejuvenation with the Ministry of Drinking Water and Sanitation?
(A) 2014

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(B) 2019
(C) 2021
(D) 2012
(E) Answer not known

37. Match the following water systems of Tamil Nadu in List I with their primary utility in List II:
List I:
P. Eris
Q. Ooranis
R. Kuttai
S. Percolation ponds
List II:
I. Drinking water ponds for human and livestock use
II. Small ponds used primarily to recharge local groundwater
III. Large surface irrigation tanks structurally integrated into networks
IV. Engineered shallow depressions specifically for capturing runoff for aquifer recharge
(A) P-III, Q-I, R-II, S-IV
(B) P-I, Q-III, R-IV, S-II
(C) P-III, Q-II, R-I, S-IV
(D) P-II, Q-IV, R-III, S-I
(E) Answer not known

38. The Amaravati river, a significant tributary of the Cauvery, originates in which of the following mountain ranges?
(A) Nilgiri Hills
(B) Javadi Hills
(C) Shevaroy Hills
(D) Anamalai Hills
(E) Answer not known

39. Arrange the following major left-bank tributaries of the Ganga river in the correct sequence from West to East:
I. Gomti
II. Gandak
III. Ramganga
IV. Kosi
(A) III, I, II, IV
(B) I, III, II, IV
(C) III, II, I, IV
(D) I, II, III, IV
(E) Answer not known

40. Identify the correctly matched pair regarding Peninsular rivers:
(A) Godavari - West-flowing river
(B) Mahanadi - Rift valley flow
(C) Tapti - Estuary formation
(D) Narmada - Delta formation
(E) Answer not known

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41. Consider the following statements regarding the tributaries of the Ganga:
I. The Yamuna is the longest tributary of the Ganga and joins it at Prayagraj.
II. The Kosi is often referred to as the "Sorrow of Bihar" due to its frequent shifting of course and flooding.
III. The Gandak and Ghaghara rivers originate in the Peninsular plateau and flow northwards to join the Ganga.
Which of the combinations given above is/are incorrect?
(A) I and II
(B) III only
(C) II and III
(D) I only
(E) Answer not known

42. Identify the correct statement regarding the proposed benefits of the inter-linking of rivers project in India.
(A) It seeks to transfer water from surplus basins to deficit regions.
(B) It aims to transfer water from water-deficit basins to water-surplus basins to maintain balance.
(C) It will eliminate the need for groundwater extraction across the entire country by the year 2030.
(D) It restricts the generation of hydroelectricity to protect the natural biological flow of rivers.
(E) Answer not known

43. Match the following mechanisms in List I with their corresponding subject matter in water resources in List II:
List I:
P. Inter-State River Water Disputes Act, 1956
Q. River Boards Act, 1956
R. Article 262
S. National Water Policy 2012
List II:

I. Constitutional provision for adjudication of water disputes
II. Establishes tribunals for resolving disputes
III. Regulation and development of inter-state rivers and river valleys
IV. Framework for planning and managing water resources sustainably
(A) P-II, Q-III, R-I, S-IV
(B) P-I, Q-IV, R-II, S-III
(C) P-III, Q-II, R-I, S-IV
(D) P-II, Q-I, R-IV, S-III
(E) Answer not known

44. Which of the following statements regarding the Indus River system is incorrect?
(A) The Indus river originates from a glacier near Bokhar Chu in the Tibetan region.
(B) The entire catchment area of the Indus is within Indian boundaries.
(C) It enters India in the Ladakh district and flows between the Ladakh and Zaskar ranges.
(D) The Sutlej, a major tributary, originates from the Rakas lake in Tibet.
(E) Answer not known

45. Given below are two statements, one is labelled as Assertion (A) and the other as Reason (R):
Assertion (A): The Hirakud Dam across the Mahanadi River serves as a crucial multipurpose project.
Reason (R): It provides flood control in the Mahanadi delta, irrigation facilities, and hydroelectric power generation.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

46. All of the following are significant features of the Brahmaputra river system, EXCEPT:
(A) It carries a massive volume of water and heavy silt load.
(B) It is characterized by braided channels in the Assam valley.
(C) It forms deep estuaries before emptying into the Bay of Bengal.
(D) It causes devastating floods annually in Assam and Bangladesh.
(E) Answer not known

47. Identify the incorrectly matched pair regarding River Water Dispute Tribunals and the rivers involved:
(A) Godavari Water Disputes Tribunal - Godavari
(B) Vansadhara Water Disputes Tribunal - Vansadhara
(C) Mahadayi Water Disputes Tribunal - Mahadayi
(D) Ravi and Beas Waters Tribunal - Yamuna
(E) Answer not known

48. What is the most appropriate reason for Tamil Nadu making rainwater harvesting mandatory for all buildings?
(A) To prevent the heavy flooding of streets during the peak northeast monsoon season.
(B) To generate domestic micro-hydroelectric power in individual urban households.
(C) To fight groundwater depletion and seawater intrusion in aquifers.
(D) To reduce the financial burden of the TWAD board by stopping municipal water supply.
(E) Answer not known

49. Consider the following basin states of the Godavari river:
I. Maharashtra
II. Telangana
III. Andhra Pradesh
IV. Chhattisgarh
Which of the combinations given above represents the correct states sharing the Godavari basin?
(A) I, II and III
(B) I and IV
(C) I, II, III and IV
(D) II, III and IV
(E) Answer not known

50. The controversy surrounding the Sardar Sarovar Dam primarily focuses on which conceptual issue in large-scale river projects?
(A) The technological inability to construct dams in seismically active rift valleys.
(B) The international diplomatic tension it creates by altering river flow into neighboring countries.

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(C) The conflict over dividing the generated hydroelectricity equally among all South Indian states.
(D) The balance between development and the social/environmental costs.
(E) Answer not known

51. Select the correct order of the Indus river tributaries as they join from North to South:
(A) Jhelum, Chenab, Ravi, Sutlej
(B) Chenab, Jhelum, Sutlej, Ravi
(C) Ravi, Chenab, Jhelum, Sutlej
(D) Sutlej, Ravi, Chenab, Jhelum
(E) Answer not known

52. Eris, Ooranis, and Kuttais in Tamil Nadu are best classified as:
(A) Types of deep borewell technologies used in arid regions.
(B) Modern industrial wastewater treatment plants in urban centers.
(C) Traditional surface water harvesting and storage structures.
(D) Navigation canals linking major rivers across the state.
(E) Answer not known

53. Consider the following statements regarding the Bhavani river:
I. It is a major left-bank tributary of the Cauvery river.
II. It is a major right-bank tributary of the Cauvery river.
III. It originates in the Nilgiri hills.
IV. The Bhavanisagar Dam is constructed across it.
V. It joins the Cauvery river near Erode district.
Which of the combinations given above is/are correct?
(A) I, III, IV and V
(B) II, III, IV and V
(C) II, III and IV
(D) I, IV and V
(E) Answer not known

54. When comparing Eris and Ooranis in Tamil Nadu, which functional difference is most accurate?
(A) Eris are naturally formed lakes, while Ooranis are concrete structures built by the state.
(B) Eris rely on groundwater pumping, while Ooranis capture surface runoff for local use.
(C) Eris are used for drinking water, while Ooranis are large hydroelectric reservoirs.
(D) Eris are irrigation tanks; Ooranis are drinking water ponds.
(E) Answer not known

55. Given below are two statements, one is labelled as Assertion (A) and the other as Reason (R):
Assertion (A): The Tamirabarani is unique among Tamil Nadu rivers as it is perennial in nature.
Reason (R): The Tamirabarani river is fed by both the Southwest and Northeast monsoons due to its origin and course in the Agasthyamalai hills.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

56. Which significant feature is common to Poondi, Chembarambakkam, and Red Hills?
(A) They are natural glacial lakes found in the northern part of Tamil Nadu.
(B) They are the locations of major nuclear power plants cooled by local river water.
(C) They are the primary surface water reservoirs for Chennai's supply.
(D) They are the terminal points of the proposed Cauvery-Godavari river interlinking project.
(E) Answer not known

57. Match the following factors contributing to the groundwater crisis in Tamil Nadu in List I with their corresponding impacts in List II:
List I:
P. Unregulated agricultural pumping
Q. Deficient Northeast Monsoon
R. Rapid urban concretization
S. Seawater intrusion
List II:
I. Contamination of coastal aquifers making water unfit for drinking
II. Drastic lowering of the regional water table
III. Reduced surface runoff capture and natural percolation

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IV. Failure of seasonal reservoirs and immediate water scarcity
(A) P-II, Q-IV, R-III, S-I
(B) P-IV, Q-II, R-I, S-III
(C) P-III, Q-I, R-IV, S-II
(D) P-I, Q-III, R-II, S-IV
(E) Answer not known

58. Which of the following is an example of an east-flowing peninsular river that does NOT form a delta at its mouth?
(A) Godavari
(B) Krishna
(C) Cauvery
(D) None of the above; major east-flowing peninsular rivers generally form deltas.
(E) Answer not known

59. Arrange the following Peninsular rivers in descending order based on their approximate total length:
I. Krishna
II. Godavari
III. Cauvery
IV. Mahanadi
(A) II, I, IV, III
(B) II, I, III, IV
(C) I, II, IV, III
(D) II, IV, I, III
(E) Answer not known

60. Identify the correctly matched pair regarding proposed river interlinking projects affecting Tamil Nadu:
(A) Cauvery-Godavari Link - Transfers Godavari water to the Cauvery.
(B) Ken-Betwa Link - Supplies drinking water to the central part of Chennai city.
(C) Pamba-Achankovil-Vaippar Link - Connects Tamil Nadu rivers directly to the Ganges.
(D) Par-Tapi-Narmada Link - Diverts surplus water to the perennial Tamirabarani river.
(E) Answer not known

61. Consider the following states:
I. Maharashtra
II. Karnataka
III. Telangana
IV. Andhra Pradesh
Which combination correctly represents the states that share the Krishna river basin?
(A) I and II
(B) II, III and IV
(C) I, II, III and IV
(D) I, II and IV
(E) Answer not known

62. Which of the following is least relevant to the objectives of the National Water Policy 2012?
(A) Adapting to the impacts of climate change on water resources.
(B) Banning all agricultural borewells through groundwater nationalization.
(C) Encouraging community participation in water management.
(D) Establishing a standardized national information system for water.
(E) Answer not known

63. Match the following rivers in List I with their states of origin in List II:
List I:
P. Godavari
Q. Mahanadi
R. Narmada
S. Cauvery
List II:
I. Madhya Pradesh
II. Karnataka
III. Maharashtra
IV. Chhattisgarh
(A) P-III, Q-IV, R-I, S-II
(B) P-I, Q-II, R-III, S-IV
(C) P-III, Q-I, R-IV, S-II
(D) P-IV, Q-III, R-II, S-I
(E) Answer not known

64. What can be inferred from the prolonged history of the Cauvery water dispute?
(A) River disputes are easily resolved by simply adhering to historical pre-independence agreements without modification.
(B) The Supreme Court has no jurisdiction over inter-state river disputes, prolonging the issue indefinitely.
(C) The conflict arises from a lower riparian state's reliance on upper riparian flows.
(D) Groundwater availability in the delta makes river water sharing practically irrelevant for agriculture.
(E) Answer not known

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65. Given below are two statements, one is labelled as Assertion (A) and the other as Reason (R):
Assertion (A): The Sabarmati river is an important west-flowing river of India.
Reason (R): It originates in the Aravalli range of Rajasthan and flows through Gujarat into the Gulf of Khambhat.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

66. What is the major disadvantage or challenge associated with multi-purpose river valley projects in India?
(A) They fail to generate any reliable hydroelectricity for the industrial sector.
(B) They are used for navigation while completely ignoring all irrigation needs.
(C) They accelerate the river speed causing massive soil erosion in downstream areas.
(D) They cause displacement and submerge forest and farm lands.
(E) Answer not known

67. Identify the correct pair regarding constitutional provisions and water:
(A) Entry 56, Union List - Exclusive power to state governments to regulate inter-state rivers
(B) Entry 17, State List - Water, including water supplies, irrigation and canals
(C) Article 280 - Adjudication of disputes relating to waters of inter-state rivers
(D) Article 262 - Finance Commission's role in water dispute settlement
(E) Answer not known

68. The total water availability in India is generally classified into which two primary sources for planning and assessment?
(A) Rainwater and Desalinated water
(B) Glacial meltwater and Oceanic water
(C) Lake water and Wetland water
(D) Surface water and Groundwater resources
(E) Answer not known

69. Consider the following statements about the Ken-Betwa river interlinking project:
I. It is India's first major river interlinking project.
II. It aims to transfer surplus water from the Betwa river to the Ken river.
III. It aims to transfer surplus water from the Ken river to the Betwa river.
IV. It will benefit the drought-prone Bundelkhand region.
Which of the combinations given above is/are correct?
(A) I, II and IV
(B) I, III and IV
(C) II, III and IV
(D) I and III
(E) Answer not known

70. According to official estimates of India's water resources, what is the approximate ratio of utilizable surface water to utilizable groundwater?
(A) Utilizable surface water is approximately equal to the amount of utilizable groundwater.
(B) Utilizable groundwater is more than double the amount of utilizable surface water.
(C) India possesses zero utilizable surface water due to the presence of extreme pollution.
(D) Utilizable surface water is significantly greater than groundwater.
(E) Answer not known

71. Select the correct sequential path of the Cauvery river through the districts of Tamil Nadu before it reaches the sea:
(A) Dharmapuri → Salem → Erode → Tiruchirappalli → Thanjavur
(B) Erode → Dharmapuri → Thanjavur → Salem → Tiruchirappalli
(C) Salem → Dharmapuri → Tiruchirappalli → Erode → Thanjavur
(D) Thanjavur → Tiruchirappalli → Erode → Salem → Dharmapuri
(E) Answer not known

72. Which of the following is a factual statement regarding the Bhavanisagar Dam?
(A) It is built completely out of concrete and is the highest dam in India.
(B) It was constructed across the Palar river to

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supply water exclusively to Chennai.
(C) It is located at the confluence of the Vaigai and Tamirabarani rivers.
(D) It is a massive earthen dam in the Erode district of Tamil Nadu.
(E) Answer not known

73. Consider the following statements regarding the historical significance of the Eri system in Tamil Nadu:
I. Eris were largely constructed during the Pallava, Chola, and Pandya regimes.
II. They served solely as ornamental water bodies for temple rituals.
III. They acted as a decentralized system to mitigate both droughts and floods.
IV. Their maintenance was traditionally managed by local communities through the Kudimaramathu system.
V. They ensured localized groundwater recharge and sustained agriculture in semi-arid regions.
Which of the combinations given above is/are correct?
(A) I, III, IV and V
(B) I, II, III and V
(C) II, III, IV and V
(D) I, IV and V
(E) Answer not known

74. Identify the correct statement regarding the functioning of Eris in Tamil Nadu.
(A) Eris are isolated tanks that have no connection to natural river systems.
(B) Eris are deep borewells drilled directly into very hard rock aquifers.
(C) Eris are arranged in cascades where overflow feeds the lower tank.
(D) Eris function exclusively as specialized hydroelectric power generation reservoirs.
(E) Answer not known

75. Given below are two statements, one is labelled as Assertion (A) and the other as Reason (R):
Assertion (A): The Agasthyamalai biosphere reserve is critical for the hydrology of southern Tamil Nadu.
Reason (R): The Tamirabarani river, which supports extensive agriculture in Tirunelveli and Thoothukudi, originates from the Agasthyamalai peaks.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

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76. Which of the following statements regarding the Palar river is incorrect?
(A) Its surface flow is perennial and fast throughout the year.
(B) It originates in the Nandi Hills of Karnataka.
(C) It flows through Karnataka, Andhra Pradesh, and Tamil Nadu.
(D) It enters the Bay of Bengal near Vayalur, south of Chennai.
(E) Answer not known

77. Match the following major cities in List I with the rivers they are situated on or primarily dependent upon in List II:
List I:
P. Madurai
Q. Tiruchirappalli
R. Surat
S. Cuttack
List II:
I. Cauvery
II. Mahanadi
III. Vaigai
IV. Tapti
(A) P-III, Q-I, R-IV, S-II
(B) P-I, Q-III, R-II, S-IV
(C) P-III, Q-IV, R-I, S-II
(D) P-IV, Q-I, R-III, S-II
(E) Answer not known

78. All of the following are tributaries of the Krishna river, EXCEPT:
(A) Tungabhadra
(B) Bhima
(C) Pranhita
(D) Musi
(E) Answer not known

79. Arrange the following peninsular river basins in descending order of their catchment area size:
I. Godavari
II. Krishna
III. Mahanadi

IV. Cauvery
(A) I, II, III, IV
(B) I, II, IV, III
(C) II, I, III, IV
(D) I, III, II, IV
(E) Answer not known

80. Identify the correct pair regarding river classification based on their origin:
(A) Peninsular Rivers - Snow-fed and highly erosive rivers
(B) East-flowing Rivers - Flow through rift valleys
(C) Himalayan Rivers - Antecedent and perennial rivers
(D) West-flowing Rivers - Form massive deltas
(E) Answer not known

81. Consider the following statements regarding the Vaigai river:
I. It originates in the Varusanadu Hills of the Western Ghats.
II. It completely traverses through the state of Tamil Nadu.
III. It drains into the Palk Strait near Ramanathapuram.
Which of the combinations given above is/are correct?
(A) I and II
(B) I and III
(C) II and III
(D) I, II and III
(E) Answer not known

82. Which of the following most appropriately highlights the importance of water resources for industries in India?
(A) Industries use river water strictly for the drinking needs of employees.
(B) Industries mandate using only desalinated ocean water to protect rivers.
(C) Industries require water for cooling, steam, and chemical solvents.
(D) Industries completely recycle 100% of their water, creating zero demand.
(E) Answer not known

83. Match the different names of the Brahmaputra river in List I with the corresponding regions where they are used in List II:
List I:
P. Tsangpo
Q. Dihang
R. Brahmaputra
S. Jamuna
List II:
I. Arunachal Pradesh
II. Assam
III. Bangladesh
IV. Tibet
(A) P-IV, Q-I, R-II, S-III
(B) P-I, Q-IV, R-III, S-II
(C) P-IV, Q-II, R-I, S-III
(D) P-III, Q-I, R-IV, S-II
(E) Answer not known

84. The application of Watershed Management programs, such as Hariyali and Neer-Aanchal, primarily focuses on:
(A) Interlinking major Himalayan rivers to provide water to south India.
(B) Privatizing rural water supply networks for revenue generation purposes.
(C) Mandating the closure of all large hydroelectric dams in Peninsular India.
(D) Enhancing groundwater recharge and community-led runoff harvesting.
(E) Answer not known

85. Given below are two statements, one is labelled as Assertion (A) and the other as Reason (R):
Assertion (A): The overexploitation of groundwater in states like Punjab, Haryana, and Tamil Nadu has led to severe aquifer depletion.
Reason (R): These states have largely relied on extensive tubewell irrigation to sustain intensive agriculture and green revolution practices.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

86. Which of the following properly classifies the Himalayan river systems?
(A) Godavari, Krishna, and Cauvery systems
(B) Narmada, Tapti, and Sabarmati systems
(C) Indus, Ganga, and Brahmaputra systems
(D) Mahanadi, Subarnarekha, and Brahmani systems

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(E) Answer not known

87. Identify the incorrectly matched pair regarding rivers and their significant flood impacts:
(A) Luni - Devastating floods in Kerala
(B) Kosi - Sorrow of Bihar
(C) Damodar - Sorrow of Bengal
(D) Brahmaputra - Assam floods
(E) Answer not known

88. When comparing east-flowing and west-flowing peninsular rivers, which of the following statements is true?
(A) East-flowing rivers have shorter courses compared to the major west-flowing rivers.
(B) East-flowing rivers are perennial, whereas west-flowing rivers are strictly seasonal.
(C) East-flowing rivers form estuaries, while west-flowing rivers form deltas.
(D) East-flowing rivers join the Bay of Bengal; west-flowing join the Arabian Sea.
(E) Answer not known

89. Consider the following statements regarding the proposed Cauvery-Godavari link:
I. It aims to divert the unutilized surplus water of the Godavari river to the deficit Cauvery basin.
II. It is a part of the Peninsular component of the National Perspective Plan for interlinking rivers.
III. It proposes to entirely reverse the flow of the Cauvery river to make it a west-flowing river.
IV. It involves the integration of the Krishna and Pennar rivers en route to the Cauvery.
Which of the combinations given above is/are correct?
(A) I, II and IV
(B) II, III and IV
(C) I and III
(D) I, II and III
(E) Answer not known

90. Which of the following features accurately describes "Percolation Ponds" used in Tamil Nadu's water conservation?
(A) They are shallow depressions designed to impound runoff for recharge.
(B) They are large concrete tanks built above ground to store municipal water.
(C) They are massive earthen dams built across perennial rivers for power.
(D) They are specifically designed channels that carry wastewater to the sea.
(E) Answer not known

91. Select the correct order of the following reservoirs supplying water to Chennai based on their general geographical location from North to South:
(A) Poondi, Red Hills, Chembarambakkam
(B) Chembarambakkam, Red Hills, Poondi
(C) Red Hills, Poondi, Chembarambakkam
(D) Poondi, Chembarambakkam, Red Hills
(E) Answer not known

92. The "Jal Jeevan Mission" is an example of a scheme falling under which category?
(A) Rural drinking water supply and management
(B) River Interlinking projects
(C) Flood control and mitigation projects
(D) Heavy irrigation and dam construction projects
(E) Answer not known

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93. Consider the following key provisions of the National Water Policy 2012:
I. Integrated Water Resources Management (IWRM).
II. Prioritizing safe drinking water and sanitation.
III. Abolishing all State Water Boards and placing water exclusively under the Union list.
IV. Enhancing water use efficiency across all sectors.
V. Pricing of water to reflect its economic value while protecting the vulnerable.
Which of the combinations given above is/are correct?
(A) I, II, IV and V
(B) I, II, III and V
(C) II, III, IV and V
(D) I, III and IV
(E) Answer not known

94. Which of the following functions is least relevant to the Cauvery Water Management Authority (CWMA)?
(A) Ensuring the implementation of the

Supreme Court's final orders on water sharing.
(B) Mandating specific crops for all delta farmers to follow in the harvest season.
(C) Regulating the release of water by Karnataka at Biligundlu.
(D) Monitoring the storage position of major reservoirs in the Cauvery basin.
(E) Answer not known

95. Given below are two statements, one is labelled as Assertion (A) and the other as Reason (R):
Assertion (A): The Mettur Dam is highly significant for agriculture in the Cauvery delta region.
Reason (R): The release of water from Mettur Dam dictates the timing and success of the Kuruvai and Samba paddy crops in the delta districts.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

96. What can be inferred from the occurrence of the "Day Zero" scare in Chennai in 2019?
(A) Chennai has fundamentally inadequate annual rainfall compared to desert regions.
(B) The interlinking of rivers project was successfully completed just before the crisis.
(C) Surface reservoir reliance without groundwater buffering creates vulnerability.
(D) Seawater desalination completely failed to provide any water to the city.
(E) Answer not known

97. Match the following dams of Tamil Nadu in List I with the districts they are located in List II:
List I:
P. Mettur Dam
Q. Bhavanisagar Dam
R. Vaigai Dam
S. Papanasam Dam
List II:
I. Theni
II. Salem
III. Erode
IV. Tirunelveli
(A) P-II, Q-III, R-I, S-IV
(B) P-III, Q-II, R-IV, S-I
(C) P-II, Q-I, R-III, S-IV
(D) P-IV, Q-III, R-I, S-II
(E) Answer not known

98. What is a significant advantage of integrating rooftop rainwater harvesting methods in urban centers like Chennai?
(A) It permanently prevents all forms of urban flooding regardless of rainfall intensity.
(B) It eliminates the need for any municipal water supply grid.
(C) It reduces runoff, eases drain loads, and replenishes shallow aquifers.
(D) It creates large recreational lakes on building terraces.
(E) Answer not known

99. Arrange the following tributaries of the Cauvery river in the correct sequential order as they join the main river from upstream to downstream:
I. Hemavati
II. Kabini
III. Bhavani
IV. Amaravati
(A) I, II, III, IV
(B) II, I, IV, III
(C) I, III, II, IV
(D) II, III, I, IV
(E) Answer not known

100. Identify the incorrectly matched pair regarding traditional water systems and their specific uses:
(A) Ooranis - Drinking water for villages
(B) Kuttais - Rainwater catchment for livestock
(C) Eris - Surface irrigation for agriculture
(D) Kanmais - Subterranean drainage tunnels for sewage
(E) Answer not known

101. Consider the following components of the Namami Gange programme:
I. Sewerage Treatment Infrastructure.
II. River-Front Development and River Surface Cleaning.
III. Complete diversion of the Ganga to western India.
Which of the combinations given above is/are correct?
(A) I only

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(B) I and II
(C) II and III
(D) I, II and III
(E) Answer not known

102. How is the "Kuttai" system defined in the context of traditional Tamil Nadu water harvesting?
(A) A large perennial river.
(B) A massive masonry dam built by Chola kings.
(C) A small pond used for cattle and localized groundwater recharge.
(D) An underground canal system for urban drainage.
(E) Answer not known

103. Match the following west-flowing rivers in List I with their prominent characteristics in List II:
List I:
P. Narmada
Q. Tapti
R. Sabarmati
S. Mahi
List II:
I. Originates in the Satpura range and flows through a rift valley
II. Originates in the Amarkantak plateau and forms the Dhuandhar falls
III. Originates in the Vindhya range and crosses the Tropic of Cancer twice
IV. Originates in the Aravalli range and flows into the Gulf of Khambhat
(A) P-II, Q-I, R-IV, S-III
(B) P-I, Q-II, R-III, S-IV
(C) P-II, Q-IV, R-I, S-III
(D) P-III, Q-I, R-IV, S-II
(E) Answer not known

104. In which year was the Cauvery Water Disputes Tribunal (CWDT) constituted by the Government of India?
(A) 1956
(B) 1990
(C) 2007
(D) 2013
(E) Answer not known

105. Given below are two statements, one is labelled as Assertion (A) and the other as Reason (R):
Assertion (A): The Godavari river is often referred to as the "Dakshin Ganga" (Ganges of the South).
Reason (R): It originates in the Himalayas and carries a massive volume of glacial meltwater similar to the Ganga.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

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106. Which of the following is a factual statement about the Kudimaramathu scheme implemented in Tamil Nadu?
(A) It revives the ancient practice of community participation in maintenance.
(B) It involves hiring international contractors to build new mega-dams in the state.
(C) It aims to interlink the Palar and Vaigai rivers using high-pressure underground pipes.
(D) It was exclusively designed to distribute free drinking water in central Chennai.
(E) Answer not known

107. Identify the correct pair regarding groundwater regulation in India:
(A) Jal Jeevan Mission - Solely responsible for preventing industrial groundwater extraction
(B) National Water Informatics Centre - Adjudicates inter-state groundwater disputes
(C) TWAD Board - Formulates the National Water Policy
(D) Central Ground Water Board - Maps and regulates resources nationally.
(E) Answer not known

108. Identify the correct statement regarding the challenges of the Inter-linking of Rivers project in India.
(A) Challenges include capital needs, ecological shifts, and human displacement.
(B) The project faces minimal ecological concerns as it mirrors natural river flows exactly.
(C) The project is opposed because all rivers in India are currently drying up and have no surplus.

(D) Constitutional provisions explicitly prohibit any alteration to the natural course of rivers.
(E) Answer not known

109. Consider the following statements about the Mahanadi river basin:
I. It extends over Chhattisgarh, Odisha, and parts of Jharkhand, Maharashtra, and Madhya Pradesh.
II. It is bound by the Central India hills on the north and the Eastern Ghats on the south and east.
III. It is known for frequent flooding in the Odisha plains before the construction of the Hirakud Dam.
IV. It does not form a delta before draining into the Bay of Bengal.
Which of the combinations given above is/are incorrect?
(A) I and II
(B) III only
(C) IV only
(D) I, II and IV
(E) Answer not known

110. Which of the following statements regarding the Tapti river is incorrect?
(A) It is the second-largest west-flowing river of Peninsular India.
(B) It originates in the Western Ghats near Mahabaleshwar.
(C) It is known as the "twin" or "handmaid" of the Narmada river.
(D) Its basin covers parts of Madhya Pradesh, Maharashtra, and Gujarat.
(E) Answer not known

111. Select the correct order of the following major multipurpose projects on the Narmada river as one travels from East to West:
(A) Sardar Sarovar, Indira Sagar, Omkareshwar
(B) Indira Sagar, Omkareshwar, Sardar Sarovar
(C) Omkareshwar, Sardar Sarovar, Indira Sagar
(D) Sardar Sarovar, Omkareshwar, Indira Sagar
(E) Answer not known

112. All of the following fall under the purview and functions of the Tamil Nadu Water Supply and Drainage (TWAD) Board, EXCEPT:
(A) Planning and executing water supply schemes in rural areas.
(B) Implementing underground sewerage schemes in municipalities.
(C) Supplying drinking water to the Chennai Metropolitan Area.
(D) Ensuring sustainable urban water management in town panchayats.
(E) Answer not known

113. Consider the following statements about the Indus Waters Treaty (1960):
I. It was brokered by the World Bank.
II. India has exclusive rights over the waters of Ravi, Sutlej, and Beas.
III. Pakistan has exclusive rights over the waters of Indus, Jhelum, and Chenab, with no usage allowed for India.
IV. India is permitted limited use of the western rivers for domestic, non-consumptive, and agricultural purposes.
V. It has survived multiple wars between India and Pakistan.
Which of the combinations given above is/are correct?
(A) I, II, III and V
(B) I, II, IV and V
(C) II, III, IV and V
(D) I, III and IV
(E) Answer not known

114. Which is the most appropriate reason for the Tamil Nadu government focusing on the revival of the Kudimaramathu scheme?
(A) To strictly comply with World Bank loan conditions for urban development.
(B) To create new statutory bodies that replace the Public Works Department.
(C) To rejuvenate minor irrigation tanks through community ownership.
(D) To forcibly acquire private agricultural lands for state mega-projects.
(E) Answer not known

115. Given below are two statements, one is labelled as Assertion (A) and the other as Reason (R):
Assertion (A): The Brahmaputra river carries less silt in its Tibetan course compared to its course in India.
Reason (R): In Tibet, the river carries a smaller volume of water and flows through a cold, dry region, resulting in less erosive power.
(A) Both A and R are true and R is the correct

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explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

116. The mandatory provision for Rainwater Harvesting (RWH) implemented in Tamil Nadu in 2001 practically resulted in:
(A) The immediate eradication of the need for Chennai's desalination plants.
(B) Massive structural damage to all residential buildings due to forced rooftop water storage.
(C) The total stoppage of surface water supply from reservoirs.
(D) A measurable rise in the groundwater table in several urban areas.
(E) Answer not known

117. Match the following major Indian rivers in List I with their approximate total lengths in List II:
List I:
P. Ganga
Q. Godavari
R. Krishna
S. Cauvery
List II:
I. 1,465 km
II. 2,525 km
III. 800 km
IV. 1,400 km
(A) P-II, Q-I, R-IV, S-III
(B) P-I, Q-II, R-III, S-IV
(C) P-II, Q-IV, R-I, S-III
(D) P-III, Q-I, R-IV, S-II
(E) Answer not known

118. The water resources of India can be broadly classified based on occurrence into:
(A) East-flowing and West-flowing waters
(B) Monsoon rain and Winter rain
(C) Surface water and Groundwater
(D) Himalayan rivers and Peninsular rivers
(E) Answer not known

119. Arrange the following major rivers of Tamil Nadu from South to North:
I. Tamirabarani
II. Vaigai
III. Cauvery
IV. Palar
(A) I, II, III, IV
(B) IV, III, II, I
(C) II, I, IV, III
(D) I, III, II, IV
(E) Answer not known

120. Identify the correct pair distinguishing check dams and percolation ponds:
(A) Check Dams - Used exclusively for hydropower; Percolation Ponds - Used strictly for urban drinking water
(B) Check Dams - Natural formations; Percolation Ponds - Concrete high-rise structures
(C) Check Dams - Always cause floods; Percolation Ponds - Always dry up rapidly
(D) Check Dams - Slow water flow; Percolation Ponds - Impound runoff for infiltration.
(E) Answer not known

121. Consider the following sources regarding Chennai's water supply:
I. Veeranam Lake
II. Minjur Desalination Plant
III. Mettur Dam
Which of the combinations given above correctly identifies active sources contributing to Chennai's water supply?
(A) I and II
(B) II and III
(C) I and III
(D) I, II and III
(E) Answer not known

122. Comparing the groundwater scenarios of the Indo-Gangetic plains and Tamil Nadu, which statement is true?
(A) Northern alluvial aquifers yield more water and recharge faster than hard rock aquifers.
(B) Tamil Nadu's hard rock terrain allows for faster and larger groundwater accumulation than the plains.
(C) Both regions face identical groundwater challenges as both rely exclusively on northeast monsoon rainfall.
(D) Tamil Nadu has no groundwater extraction regulations, unlike the northern plains.
(E) Answer not known

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123. Match the following water harvesting schemes in List I with the states they are primarily associated with in List II:
List I:
P. Mission Kakatiya
Q. Kudimaramathu
R. Mukhya Mantri Jal Swavalamban Abhiyan
S. Neeru-Chettu
List II:
I. Tamil Nadu
II. Telangana
III. Andhra Pradesh
IV. Rajasthan
(A) P-II, Q-I, R-IV, S-III
(B) P-I, Q-II, R-III, S-IV
(C) P-II, Q-III, R-I, S-IV
(D) P-III, Q-I, R-IV, S-II
(E) Answer not known

124. What is the significant feature of the Amaravati river in Tamil Nadu?
(A) It is a major tributary of the Cauvery supporting agriculture in Tiruppur and Karur.
(B) It is the longest river in Tamil Nadu entirely within its borders.
(C) It is the only river in Tamil Nadu that flows westwards into the Arabian Sea.
(D) It serves as the primary drinking water source for the city of Chennai.
(E) Answer not known

125. Given below are two statements, one is labelled as Assertion (A) and the other as Reason (R):
Assertion (A): The Kosi river is infamously known as the "Sorrow of Bihar".
Reason (R): The Kosi frequently shifts its course and causes massive, devastating floods in the plains of North Bihar due to a heavy silt load.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

126. Which of the following rivers acts as a major distributary of the Cauvery river in its delta region?
(A) Bhavani
(B) Hemavati
(C) Kollidam (Coleroon)
(D) Kabini
(E) Answer not known

127. Identify the incorrectly matched pair regarding dams and their rivers:
(A) Sardar Sarovar Dam - Narmada
(B) Hirakud Dam - Mahanadi
(C) Tehri Dam - Bhagirathi
(D) Nagarjuna Sagar Dam - Godavari
(E) Answer not known

128. Which of the following activities is least relevant to the core concept of Watershed Management?
(A) Soil and moisture conservation
(B) Afforestation and pasture development
(C) Deepening drainage lines for faster run-off into the sea
(D) Rainwater harvesting and groundwater recharge
(E) Answer not known

129. Consider the following statements regarding the Pennaiyar river:
I. It is also known as the Dakshina Pinakini.
II. It flows entirely within the boundaries of Tamil Nadu.
III. It empties into the Bay of Bengal near Cuddalore.
IV. The Sathanur Dam is constructed across this river.
Which of the combinations given above is/are correct?
(A) I, II and III
(B) I, III and IV
(C) II, III and IV
(D) I, II and IV
(E) Answer not known

130. What can be inferred about the capacity issues of the Mettur Dam in recent decades?
(A) Its capacity has drastically increased due to natural deepening of the reservoir bed.
(B) The dam structure has been completely dismantled to allow free flow of water.
(C) It consistently overflows throughout the year regardless of rainfall patterns.
(D) Storage capacity has been significantly reduced due to heavy siltation.

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(E) Answer not known

131. Select the correct timeline sequence regarding the adjudication of the Krishna Water Disputes.
(A) Constitution of KWDT-I → Award of KWDT-I → Constitution of KWDT-II → Award of KWDT-II
(B) Award of KWDT-I → Constitution of KWDT-I → Constitution of KWDT-II → Award of KWDT-II
(C) Constitution of KWDT-II → Award of KWDT-II → Constitution of KWDT-I → Award of KWDT-I
(D) Award of KWDT-II → Constitution of KWDT-II → Constitution of KWDT-I → Award of KWDT-I
(E) Answer not known

132. A significant ecological disadvantage often cited against the inter-linking of rivers project is:
(A) The complete eradication of all aquatic life in the surplus river basins.
(B) Potential transfer of invasive species and pollutants between basins.
(C) The immediate freezing of all rivers involved due to flow alterations.
(D) The over-salinization of the Himalayan glaciers.
(E) Answer not known

133. Consider the following statements about the urban water management by the TWAD Board in Tamil Nadu:
I. It designs and executes water supply schemes for Municipalities and Town Panchayats.
II. It hands over the completed schemes to local bodies for maintenance.
III. It maintains Combined Water Supply Schemes (CWSS) covering more than one local body.
IV. It generates its own electricity to power all desalination plants independently.
V. It has exclusive jurisdiction over the Chennai Metropolitan Water Supply and Sewerage Board (CMWSSB).
Which of the combinations given above is/are correct?
(A) I, II, III and IV
(B) I, II and III
(C) II, III, IV and V
(D) I, III and V
(E) Answer not known

134. Which statement best defines the structural functioning of the traditional Eri system?
(A) An underground tank built entirely of concrete to harvest rooftop water.
(B) A mechanized pumping system drawing water from deep crystalline rocks.
(C) A coastal barrage meant strictly to prevent seawater intrusion.
(D) A surface body formed by constructing an earthen bund across a slope.
(E) Answer not known

135. Given below are two statements, one is labelled as Assertion (A) and the other as Reason (R):
Assertion (A): The Cheyyar river is a significant water source for the northern districts of Tamil Nadu.
Reason (R): The Cheyyar river is a major tributary of the Palar river and supports the agricultural and domestic water needs of the Tiruvannamalai and Kanchipuram regions.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

136. The Jal Jeevan Mission aims to provide Functional Household Tap Connections (FHTC) to every rural household in India by which target year?
(A) 2022
(B) 2024
(C) 2030
(D) 2025
(E) Answer not known

137. Match the following rivers in List I with their origin glaciers or hills in List II:
List I:
P. Ganga
Q. Yamuna
R. Indus
S. Godavari
List II:
I. Trimbakeshwar

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II. Bokhar Chu glacier
III. Gangotri glacier
IV. Yamunotri glacier
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(B) P-IV, Q-III, R-I, S-II
(C) P-III, Q-I, R-IV, S-II
(D) P-II, Q-IV, R-III, S-I
(E) Answer not known

138. Which of the following facts accurately describes the formation of the Cauvery delta?
(A) It is formed purely by the backwaters of the Bay of Bengal pushing into the mainland.
(B) It originates immediately after the Hogenakkal falls in Dharmapuri district.
(C) It begins where the river splits into the Kollidam and main Cauvery.
(D) It is a unique delta that drains westward into the Arabian Sea.
(E) Answer not known

139. Arrange the following right-bank tributaries of the Brahmaputra river in India from West to East:
I. Teesta
II. Manas
III. Kameng
IV. Subansiri
(A) I, II, III, IV
(B) IV, III, II, I
(C) I, III, II, IV
(D) II, I, IV, III
(E) Answer not known

140. Identify the correct pair regarding the achievements and components of the Namami Gange programme:
(A) Aviral Ganga - Completely stopping the river flow to build massive reservoirs
(B) Nirmal Ganga - Achieving unpolluted flow by treating sewage and effluents.
(C) Jan Ganga - Relocating all populations away from the river banks
(D) Gyan Ganga - Extracting mineral wealth from the riverbed
(E) Answer not known

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ANSWERS

1. (C) I and III
The National Water Policy 2012 emphasizes treating water as an economic good to promote conservation and efficient use across various sectors. It also recommends establishing a standardized national information system with integrated data banks. However, the policy does not mandate the inter-linking of all Indian rivers by 2030, which is part of a different national perspective plan.

2. (D) The rational utilization of land and water resources for optimum production with minimum hazard to natural resources.
Watershed management refers to the efficient and sustainable utilization of land and water resources within a specific geographical area. It aims at optimizing agricultural production while ensuring minimal degradation of natural resources like soil and vegetation. This process includes rainwater harvesting, groundwater recharge, and the overall conservation of the ecosystem to benefit the local community and environment.

3. (A) P-III, Q-IV, R-II, S-I
The Hirakud Dam is built across the Mahanadi River in Odisha, while the Sardar Sarovar Dam is a major project on the Narmada River in Gujarat. The Bhavanisagar Dam is located on the Bhavani River in Tamil Nadu. Finally, the Mettur Dam is a significant structure constructed across the Cauvery River, providing vital irrigation for delta agriculture.

4. (C) To provide safe and adequate drinking water through individual household tap connections to all rural households.
The Jal Jeevan Mission is a central government initiative designed to ensure that every rural household in India has access to safe and sufficient drinking water. This is achieved by providing functional household tap connections to all residences. The mission focuses on service delivery and sustainability of water sources through recharge and reuse, rather than just infrastructure creation.

5. (A) Both A and R are true and R is the correct explanation of A.
Himalayan rivers are perennial, meaning they flow throughout the year without drying up during the summer months. This constant flow is maintained because these rivers receive water from two main sources: seasonal rainfall during the monsoon and the continuous melting of snow from high-altitude glaciers. The melting glaciers ensure water supply even when there is no precipitation.

6. (D) Ravi, Beas, and Sutlej
The Indus Waters Treaty, signed in 1960 between India and Pakistan, divided the six rivers of the Indus system. Under this international agreement, India was granted unrestricted use of the waters of the three Eastern rivers: the Ravi, the Beas, and the Sutlej. Conversely, the waters of the Western rivers were primarily allocated for use by Pakistan.

7. (B) Godavari - Mahabaleshwar
The Godavari River, the longest in Peninsular India, originates from Trimbakeshwar in the Nashik district of Maharashtra, not from Mahabaleshwar. Mahabaleshwar is the source for the Krishna River. The Godavari flows across the Deccan Plateau before emptying into the Bay of Bengal, and its basin covers multiple states including Maharashtra, Telangana, and Andhra Pradesh.

8. (C) It forms the Dihang gorge, the world's deepest, as it enters Indian territory.
The Brahmaputra River enters India through Arunachal Pradesh, where it carves out the spectacular Dihang gorge. This river originates in Tibet, where it is known as the Tsangpo, and eventually enters Bangladesh as the Jamuna. It is one of the largest rivers in the world by discharge and carries a massive silt load, causing frequent floods in Assam.

9. (B) III only
The Namami Gange Programme is a comprehensive flagship mission that aims

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to protect and rejuvenate the National River Ganga. While it focuses on pollution abatement and riverfront development, it also emphasizes afforestation and biodiversity conservation. The claim that it completely ignores afforestation is incorrect, as planting trees along the river banks is a core strategy for soil and water conservation.

10. (A) They exhibit a heavily meandering course and frequently shift their beds.
Unlike the Himalayan rivers, Peninsular rivers are generally characterized by fixed courses and well-adjusted valleys. They do not exhibit heavy meandering or frequent shifts in their riverbeds because they flow over a stable, hard rock terrain. Most Peninsular rivers are seasonal, depending on monsoon rains, and flow through broad, shallow valleys towards the Bay of Bengal or Arabian Sea.

11. (B) Penganga, Indravati, Pranhita, Manjira
The Godavari River possesses a vast drainage basin with several major tributaries. The Penganga, Indravati, Pranhita, and Manjira are among the most significant rivers that join the Godavari. These tributaries contribute to the river's high volume, earning it the name Dakshin Ganga. Other options list tributaries belonging to the Krishna, Cauvery, or Ganga systems, which are distinct river basins.

12. (B) Kerala
The Krishna River basin is shared by the states of Maharashtra, Karnataka, Telangana, and Andhra Pradesh. Consequently, the legal disputes regarding the sharing of its waters primarily involve these four states. Kerala is not a riparian state for the Krishna River, as its major river systems are located further south and drain into the Arabian Sea or join the Cauvery.

13. (A) I, II, III and IV
The Mahanadi river originates from Sihawa in Chhattisgarh and is home to the Hirakud Dam. It drains through Chhattisgarh and Odisha into the Bay of Bengal, with major tributaries including the Seonath and Jonk. Since it flows eastward to the Bay of Bengal, any claim that it flows west to the Arabian Sea is incorrect for this major Peninsular river.

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14. (C) It flows west through a rift valley between the Vindhyas and Satpuras.
The Narmada is a unique Peninsular river that flows westward instead of eastward. It originates in the Amarkantak Plateau and travels through a narrow rift valley located between the Vindhya and Satpura mountain ranges. This structural feature guides its path toward the Arabian Sea, where it forms a wide estuary rather than a delta at its mouth in Gujarat.

15. (C) A is true but R is false.
While the Tapti and Sabarmati are indeed west-flowing rivers in India, they do not both flow through rift valleys. The Tapti flows through a rift valley similar to the Narmada, but the Sabarmati originates in the Aravalli range and lacks such a tectonic feature. Therefore, the reason provided does not accurately apply to both rivers mentioned in the assertion.

16. (A) Article 262
Article 262 of the Indian Constitution specifically provides the Parliament with the power to adjudicate disputes relating to the waters of inter-state rivers or river valleys. This constitutional provision enables the creation of specific laws, such as the Inter-State River Water Disputes Act, which allows for the establishment of tribunals to resolve sharing conflicts between different state governments.

17. (A) P-III, Q-IV, R-I, S-II
The Palar originates in the Nandi Hills, while the Vaigai serves Madurai from the Varusanadu Hills. The Tamirabarani is a perennial river from Agasthyamalai, and the Amaravati is a major tributary of the Cauvery. These rivers play distinct roles in the hydrology of Tamil Nadu, providing drinking water, irrigation, and supporting the groundwater table across different districts and urban centers.

18. (D) Eris, Ooranis, and Kuttai systems
Tamil Nadu has a rich history of traditional rainwater harvesting systems that capture surface runoff for various uses. Eris are large irrigation tanks, Ooranis are ponds used specifically for drinking water, and Kuttais are smaller ponds used for livestock and local recharge. These structures are essential for managing water in

the state's semi-arid climate and replenishing depleted groundwater levels.

19. (A) I, IV, III, II
From the northernmost part of Tamil Nadu moving southwards, the major rivers are arranged as the Palar, Pennaiyar, Vaigai, and Tamirabarani. The Palar and Pennaiyar are located in the northern and north-central regions, while the Vaigai and Tamirabarani are situated in the southern part of the state. This geographical distribution reflects the topography and drainage patterns of the region.

20. (C) Poondi Reservoir - Across Kosasthalaiyar River
The Poondi Reservoir, also known as Satyamoorthy Sagar, was constructed across the Kosasthalaiyar River to serve as a primary water source for Chennai. Other reservoirs like Chembarambakkam and Red Hills also contribute to the city's supply, but they are not located on the Palar or Vaigai. These reservoirs are vital for storing monsoon runoff to meet the city's annual demand.

21. (D) I, II and III
The Cauvery River originates at Talakaveri in Karnataka and flows through Tamil Nadu. It has several left-bank tributaries like the Hemavati and Shimsha. Before entering Tamil Nadu, it forms the famous Hogenakkal falls. These features define its upper and middle courses, making it a vital resource for agriculture and power generation in both Karnataka and Tamil Nadu states.

22. (D) Himalayan rivers serve perennial irrigation and navigation; Peninsular rivers are seasonal.
Himalayan rivers are perennial because they are fed by melting glaciers and monsoon rains, making them suitable for year-round irrigation and navigation. In contrast, most Peninsular rivers are seasonal and depend entirely on rainfall, often drying up during the summer. This fundamental difference affects how these water resources are utilized for agriculture, industry, and transport throughout the different seasons.

23. (A) P-II, Q-III, R-IV, S-I
The Bhavani is a significant tributary of the Cauvery, while the Indravati joins the Godavari. The Tungabhadra is the largest tributary of the Krishna, and the Yamuna is the primary right-bank tributary of the Ganga. Matching these tributaries to their main river systems is essential for understanding the drainage and hydrological connectivity across the different regions of the Indian subcontinent.

24. (C) It is a critical reservoir for delta agriculture, built where the river enters the plains.
The Mettur Dam is one of the largest and most important dams in Tamil Nadu, constructed where the Cauvery River enters the plains. It serves as the primary reservoir for the vast irrigation network of the Cauvery delta. The timely release of water from Mettur is crucial for the success of the Kuruvai and Samba paddy crops in the region.

25. (A) Both A and R are true and R is the correct explanation of A.
The Palar River is essential for recharging the groundwater in the northern districts of Tamil Nadu and the Chennai area. Its riverbed is composed of highly porous and permeable materials, which allow floodwaters to percolate efficiently into the underlying aquifers. This natural recharge mechanism helps maintain the water table in a region that faces significant pressure from urban and agricultural extraction.

26. (A) Community-managed surface water harvesting and storage
The Eri system is a traditional method of water management in Tamil Nadu characterized by community-managed tanks. These structures harvest surface runoff during the monsoon for storage and irrigation. They represent a decentralized approach to water security, where local communities are responsible for the maintenance and distribution of water, ensuring sustainable resource management at the village level for centuries.

27. (B) Amaravati River - Distributary of the Godavari river
The Amaravati River is a major tributary of the Cauvery River in Tamil Nadu, not a distributary of the Godavari. The Godavari flows much further north, primarily through Maharashtra, Telangana, and Andhra Pradesh. In contrast, the Amaravati originates in the Anamalai Hills and

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provides vital irrigation for districts like Tiruppur and Karur before joining the main Cauvery River stream.

28. (B) Bhavanisagar Dam
The Bhavanisagar Dam is located in the Erode district and primarily serves local irrigation and power needs in that region. It is not part of the primary infrastructure that supplies drinking water to Chennai. Chennai's water supply depends on reservoirs like Poondi, Chembarambakkam, and Red Hills, as well as the Veeranam Lake and several desalination plants located along the coastal areas.

29. (A) I, II and IV
The Pennaiyar River originates in the Nandi Hills of Karnataka and flows through the districts of Krishnagiri, Dharmapuri, and Cuddalore in Tamil Nadu. It is a seasonal river that depends on monsoon rains for its flow. However, it does not merge with the Arabian Sea; instead, it flows eastward and empties into the Bay of Bengal near Cuddalore.

30. (C) Over-extraction for farming and cities paired with unpredictable monsoon patterns.
Tamil Nadu's recurrent groundwater crisis is driven by the massive over-extraction of water for agricultural and urban needs, exceeding the natural recharge rate. This situation is worsened by unpredictable and often deficient monsoon patterns, which fail to replenish aquifers. The combination of high demand and variable supply leads to falling water tables and increased vulnerability to droughts in the region.

31. (A) Cauvery Water Disputes Tribunal (CWDT) → Supreme Court Final Verdict → Cauvery Water Management Authority (CWMA)
The institutional resolution of the Cauvery water dispute began with the constitution of the CWDT in 1990. After decades of legal proceedings, the Supreme Court delivered its final verdict in 2018. Following this judgment, the central government established the Cauvery Water Management Authority to oversee and implement the court's orders regarding the sharing of water between the riparian states.

32. (C) They slow water flow to enhance recharge and reduce soil erosion.
Check dams are small, low-cost structures built across seasonal rivers and streams. Their primary purpose is to slow down the velocity of water flow during the monsoon, which promotes the infiltration of water into the ground to recharge local aquifers. Additionally, by reducing the speed of the water, they help minimize soil erosion along the riverbanks and in the downstream areas.

33. (B) I, II and III
The TWAD Board provides drinking water and sewerage facilities to the whole state of Tamil Nadu, excluding the Chennai Metropolitan Area. It implements combined water supply schemes that utilize major rivers to serve multiple habitations. While it promotes water conservation, it is a state government body and is not directly controlled by the Union Jal Shakti Ministry or rural rainwater enforcement.

34. (D) Community participation in maintaining and restoring local water bodies.
Kudimaramathu is an ancient practice in Tamil Nadu that has been revived to ensure the maintenance of minor irrigation tanks and water bodies. The scheme emphasizes community participation, where local farmers and residents contribute to desilting and repairing canals and bunds. This collaborative effort helps improve the storage capacity of tanks and ensures efficient water distribution for agricultural purposes.

35. (A) Both A and R are true and R is the correct explanation of A.
The "Day Zero" scare in Chennai highlighted the extreme vulnerability of urban water management. This crisis occurred because the four major reservoirs supplying the city dried up completely following a severely deficient northeast monsoon and the excessive extraction of groundwater. The total failure of surface water sources forced the city to rely on expensive and distant water transport to meet basic needs.

36. (B) 2019
The Ministry of Jal Shakti was established by the Indian government in May 2019. It was formed by merging two existing ministries: the Ministry of Water Resources, River Development and Ganga

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Rejuvenation, and the Ministry of Drinking Water and Sanitation. This reorganization aimed to bring all water-related issues under a single institutional umbrella to ensure a more integrated and holistic approach.

37. (A) P-III, Q-I, R-II, S-IV
In Tamil Nadu's traditional water management, Eris are large irrigation tanks, while Ooranis provide drinking water for humans and livestock. Kuttais are small ponds used to recharge local groundwater, and percolation ponds are engineered shallow depressions designed to capture runoff for aquifer infiltration. These diverse structures work together to manage the state's limited water resources across different rural and agricultural landscapes.

38. (D) Anamalai Hills
The Amaravati River, which is a major tributary of the Cauvery, originates in the Anamalai Hills of the Western Ghats. It flows through the districts of Tiruppur and Karur, providing essential water for agriculture and industrial activities. The Amaravati Dam is also a significant multipurpose project located on this river, supporting the economic development of the surrounding river basin area.

39. (A) III, I, II, IV
Moving from west to east along the northern bank of the Ganga, the major left-bank tributaries join in the following order: Ramganga, Gomti, Gandak, and Kosi. These rivers originate in the Himalayas and flow southwards to meet the Ganga in the plains of Uttar Pradesh and Bihar. Each tributary contributes significantly to the silt and water volume of the Ganga system.

40. (C) Tapti - Estuary formation
The Tapti and Narmada are the two major Peninsular rivers that flow westwards and drain into the Arabian Sea. Unlike the east-flowing rivers like the Godavari and Mahanadi, which form large deltas, the Tapti and Narmada form estuaries at their mouths. This is because they flow through narrow rift valleys with high gradients, which prevents the extensive deposition of silt.

41. (B) III only
The Yamuna is the longest tributary of the Ganga and the Kosi is known as the "Sorrow of Bihar." However, the statement about the Gandak and Ghaghara originating in the Peninsular plateau is incorrect. These rivers actually originate in the Himalayan region and flow southwards to join the Ganga, unlike rivers like the Son, which originate in the south and flow north.

42. (A) It seeks to transfer water from surplus basins to deficit regions.
The primary objective of the inter-linking of rivers project in India is to balance water availability by transferring water from river basins with a surplus to those facing a deficit. This massive infrastructure project aims to reduce the impacts of droughts and floods, enhance irrigation coverage, and support hydroelectric power generation across the country through a network of canals and reservoirs.

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43. (A) P-II, Q-III, R-I, S-IV
The Inter-State River Water Disputes Act allows for the creation of tribunals, while the River Boards Act focuses on the regulation and development of inter-state rivers. Article 262 provides the constitutional basis for adjudicating these disputes. The National Water Policy 2012 provides a comprehensive framework for the sustainable planning and management of the country's water resources in a changing climate.

44. (B) The entire catchment area of the Indus is within Indian boundaries.
The Indus river system is an international river basin shared by India, Pakistan, China, and Afghanistan. While a significant portion of its catchment area lies within India, it is incorrect to say that the entire area is within Indian boundaries. The river originates in Tibet, flows through India and Pakistan, and eventually drains into the Arabian Sea, with the largest part located in Pakistan.

45. (A) Both A and R are true and R is the correct explanation of A.
The Hirakud Dam is a vital multipurpose project built across the Mahanadi River in Odisha. It is one of the longest earthen dams in the world and serves several essential functions, including flood control in the Mahanadi delta, providing irrigation for vast agricultural lands, and generating hydroelectric power. Its construction has been

instrumental in the economic development and disaster management of the state.

46. (C) It forms deep estuaries before emptying into the Bay of Bengal.
The Brahmaputra River system is known for its massive volume of water, heavy silt load, and braided channels in the Assam valley. It causes significant annual flooding in both India and Bangladesh. However, it does not form deep estuaries; instead, it joins the Ganga to form the world's largest delta, the Sunderbans, before emptying into the Bay of Bengal.

47. (D) Ravi and Beas Waters Tribunal - Yamuna
The Ravi and Beas Waters Tribunal was established to adjudicate the dispute over the sharing of waters from the Ravi and Beas rivers between the states of Punjab, Haryana, and Rajasthan. It has nothing to do with the Yamuna River system. Tribunals for the Godavari, Vansadhara, and Mahadayi rivers are correctly matched with their respective river systems and the participating states.

48. (C) To fight groundwater depletion and seawater intrusion in aquifers.
Tamil Nadu made rainwater harvesting mandatory for all buildings primarily to address the severe depletion of groundwater caused by over-extraction. By capturing and infiltrating rainwater into the soil, the state aims to replenish aquifers and create a freshwater barrier to prevent seawater from intruding into coastal groundwater sources, which would otherwise make the water unfit for drinking or irrigation.

49. (C) I, II, III and IV
The Godavari river basin is the second largest in India and extends over several states. It covers large parts of Maharashtra, Telangana, and Andhra Pradesh, where the river flows directly. Additionally, the basin includes significant areas of Chhattisgarh, Odisha, and parts of Madhya Pradesh and Karnataka through its numerous tributaries, making it a truly multi-state river system of great national importance.

50. (D) The balance between development and the social/environmental costs.
The controversy surrounding the Sardar Sarovar Dam on the Narmada River centers on the trade-offs between the benefits of irrigation and power and the social and environmental costs. These costs include the large-scale displacement of tribal communities and the submergence of vast tracts of forest and agricultural land. It remains a classic example of the conflict between large-scale developmental projects and sustainable equity.

51. (A) Jhelum, Chenab, Ravi, Sutlej
From north to south, the major tributaries of the Indus River join in the following sequence: Jhelum, Chenab, Ravi, and Sutlej. These rivers, along with the Beas, form the "Panjnad" and are vital for the irrigation of the Punjab region in both India and Pakistan. Their relative positions are determined by their origins in the Himalayan and Karakoram mountain ranges.

52. (C) Traditional surface water harvesting and storage structures.
Eris, Ooranis, and Kuttais are traditional water harvesting structures that have been used in Tamil Nadu for centuries. These structures are designed to capture and store surface runoff during the monsoon season. They provide a decentralized and community-based solution for irrigation, drinking water, and groundwater recharge, reflecting the historical expertise of local communities in managing water resources in semi-arid regions.

53. (B) II, III, IV and V
The Bhavani River is a major right-bank tributary of the Cauvery, originating in the Nilgiri Hills. It joins the Cauvery near the district of Erode. The Bhavanisagar Dam, a massive earthen dam, is constructed across it to provide irrigation and power. It is incorrect to classify it as a left-bank tributary, as its course lies to the south of the main river.

54. (D) Eris are irrigation tanks; Ooranis are drinking water ponds.
In the traditional water management landscape of Tamil Nadu, Eris and Ooranis serve distinct purposes. Eris are large surface tanks designed to store water primarily for the irrigation of agricultural fields. Ooranis, on the other hand, are smaller ponds specifically maintained to provide clean drinking water for the local village

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population and their livestock, ensuring year-round access to this essential resource.

55. (A) Both A and R are true and R is the correct explanation of A.
The Tamirabarani is the only perennial river in Tamil Nadu, meaning it flows throughout the year. This is possible because it originates in the high Agasthyamalai hills and receives rainfall from both the Southwest and Northeast monsoons. This dual-monsoon supply ensures a consistent water flow, supporting intensive agriculture and meeting the domestic needs of the Tirunelveli and Thoothukudi districts.

56. (C) They are the primary surface water reservoirs for Chennai's supply.
Poondi, Chembarambakkam, and Red Hills are three of the four major surface water reservoirs that provide the primary supply of drinking water to the city of Chennai. These reservoirs store runoff from the Northeast monsoon, and their storage levels are critical for the city's water security. They are linked through a network of canals and pipelines to ensure distribution across the metropolitan area.

57. (A) P-II, Q-IV, R-III, S-I
Unregulated pumping leads to a lowering water table, while a deficient monsoon causes immediate water scarcity. Rapid urban concretization reduces the natural recharge of aquifers by preventing percolation. In coastal areas, the over-extraction of groundwater leads to seawater intrusion, which contaminates freshwater aquifers and makes the water unfit for consumption. These factors collectively drive the ongoing groundwater crisis in the state.

58. (D) None of the above; major east-flowing peninsular rivers generally form deltas.
All major east-flowing Peninsular rivers, such as the Godavari, Krishna, and Cauvery, form large deltas at their mouths before draining into the Bay of Bengal. This is because these rivers have long courses and flow through regions with thick soil cover, allowing them to carry and deposit large amounts of silt as they reach the gently sloping coastal plains near the sea.

59. (A) II, I, IV, III
The Godavari is the longest Peninsular river, followed by the Krishna. The Mahanadi is the third longest, and the Cauvery is the shortest among these four major systems. This ranking is based on the total length of the river from its origin to its mouth. The Godavari's significant length and large basin area have earned it the title of the Dakshin Ganga.

60. (A) Cauvery-Godavari Link - Transfers Godavari water to the Cauvery.
The Cauvery-Godavari link is a proposed major river interlinking project that aims to divert unutilized surplus water from the Godavari basin to the water-deficit Cauvery basin. This project is a key component of the National Perspective Plan and involves transferring water through a series of canals and existing river systems to benefit the states of Telangana, Andhra Pradesh, and Tamil Nadu.

61. (C) I, II, III and IV
The Krishna River basin is a major drainage system in southern India that covers significant parts of Maharashtra, Karnataka, Telangana, and Andhra Pradesh. The river originates in Maharashtra and flows through these four states before reaching the Bay of Bengal. Each state depends on the river's waters for irrigation, industrial use, and power generation, leading to complex inter-state sharing arrangements.

62. (B) Banning all agricultural borewells through groundwater nationalization.
The National Water Policy 2012 focuses on sustainable management, community participation, and adaptation to climate change. It also emphasizes creating a national water information system. However, it does not advocate for the nationalization of groundwater or a total ban on agricultural borewells. Instead, it promotes the regulation of groundwater and the use of efficient irrigation techniques to ensure the long-term sustainability of resources.

63. (A) P-III, Q-IV, R-I, S-II
The Godavari originates in Maharashtra, while the Mahanadi has its source in Chhattisgarh. The Narmada originates in Madhya Pradesh at Amarkantak, and the Cauvery begins its journey at Talakaveri in Karnataka. Identifying

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these origins is fundamental to understanding the geography of India's river systems and the political dynamics of water sharing between the various states through which they flow.

64. (C) The conflict arises from a lower riparian state's reliance on upper riparian flows.
The Cauvery water dispute is a classic example of a conflict between an upper riparian state, Karnataka, and a lower riparian state, Tamil Nadu. Tamil Nadu's agriculture in the delta region is heavily dependent on the water released from the upper reaches of the river. The dispute arises when there is a water shortage, leading to disagreements over how the limited resource should be shared.

65. (A) Both A and R are true and R is the correct explanation of A.
The Sabarmati is one of the most important west-flowing rivers in India. It originates in the Aravalli range of Rajasthan and flows southwards through the state of Gujarat. It eventually empties into the Gulf of Khambhat in the Arabian Sea. The river is a vital water source for the cities of Ahmedabad and Gandhinagar and supports various agricultural and industrial activities.

66. (D) They cause displacement and submerge forest and farm lands.
While multi-purpose river valley projects provide benefits like irrigation and power, they also face significant challenges and criticisms. One of the major disadvantages is the large-scale displacement of local populations and the submergence of vast areas of productive agricultural land and natural forests under the reservoir. This often leads to social conflicts and the loss of biodiversity, raising questions about the long-term sustainability.

67. (B) Entry 17, State List - Water, including water supplies, irrigation and canals
Under the Seventh Schedule of the Indian Constitution, Entry 17 of the State List gives state governments the primary power to regulate water, including water supplies, irrigation, and canals. However, this power is subject to Entry 56 of the Union List, which allows the central government to regulate and develop inter-state rivers and river valleys in the public interest, providing a balanced legal framework.

68. (C) Surface water and Groundwater resources
India's water resources are primarily classified into surface water and groundwater. Surface water includes rivers, lakes, ponds, and reservoirs, which are fed by rainfall and snowmelt. Groundwater is the water stored beneath the earth's surface in aquifers, which is replenished by the infiltration of surface water. Both sources are essential for meeting the country's agricultural, industrial, and domestic water needs annually.

69. (B) I, III and IV
The Ken-Betwa link is India's first major project under the National Perspective Plan for river interlinking. It aims to transfer surplus water from the Ken River to the Betwa River, both of which are tributaries of the Yamuna. This project is specifically designed to provide irrigation and drinking water to the drought-prone Bundelkhand region, which spans across parts of Madhya Pradesh and Uttar Pradesh.

70. (D) Utilizable surface water is significantly greater than groundwater.
According to official assessments, India's total utilizable water resource is divided between surface and groundwater. The amount of utilizable surface water, primarily from rivers and reservoirs, is significantly greater than the amount of utilizable groundwater. While groundwater is a critical source for irrigation and drinking, surface water remains the largest component of the country's total managed water supply for large-scale development.

71. (A) Dharmapuri → Salem → Erode → Tiruchirappalli → Thanjavur
After entering Tamil Nadu, the Cauvery River flows through several districts in a specific sequence. It first passes through Dharmapuri and Salem, then moves through Erode and Tiruchirappalli. Finally, it enters the delta region in Thanjavur before reaching the sea. This path is essential for the irrigation of the state's most productive agricultural heartland and the distribution of water resources.

72. (D) It is a massive earthen dam in the Erode district of Tamil Nadu.
The Bhavanisagar Dam is a large earthen dam located in the Erode district of Tamil Nadu. It is built across the Bhavani River and is one of

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the most significant dams in the state for both irrigation and power generation. It serves as a vital water source for the surrounding agricultural areas and helps regulate the flow of the Cauvery River system.

73. (A) I, III, IV and V
The Eri system was a major hydrological achievement of the ancient Tamil dynasties. These tanks provided a decentralized way to manage both floods and droughts by storing monsoon runoff. They were traditionally maintained by the local community through the Kudimaramathu system, which ensured their longevity and efficiency. This system supported localized groundwater recharge and sustained agriculture in semi-arid regions for over a thousand years.

74. (C) Eris are arranged in cascades where overflow feeds the lower tank.
One of the most sophisticated features of the traditional Eri system in Tamil Nadu is its arrangement in cascades. In this system, tanks are connected so that the overflow from an upstream Eri flows through a channel to feed the next tank situated at a lower elevation. This ensures the efficient use of runoff water and prevents wastage, allowing for widespread irrigation.

75. (A) Both A and R are true and R is the correct explanation of A.
The Agasthyamalai biosphere reserve is critical for the hydrology of southern Tamil Nadu because it serves as the catchment area for the Tamirabarani River. The river originates from these high peaks and provides the primary water source for agriculture and domestic use in the Tirunelveli and Thoothukudi districts. The preservation of this ecosystem is therefore essential for the region's water security.

76. (A) Its surface flow is perennial and fast throughout the year.
The Palar River is not a perennial river; instead, it is seasonal and only flows during periods of heavy rainfall, particularly during the Northeast monsoon. For much of the year, its surface appears dry, although it has a significant subterranean flow that recharges local aquifers. It originates in Karnataka and flows through Andhra Pradesh and Tamil Nadu before reaching the Bay of Bengal.

77. (A) P-III, Q-I, R-IV, S-II
Madurai is situated on the banks of the Vaigai River, while Tiruchirappalli is a major city on the Cauvery. Surat in Gujarat is located on the Tapti River, and Cuttack in Odisha is positioned on the Mahanadi River. The location of these cities reflects the historical and economic importance of rivers for urban settlement, transportation, and providing a reliable water supply.

78. (C) Pranhita
The Tungabhadra, Bhima, and Musi are all major tributaries of the Krishna River, providing water to various regions of Maharashtra, Karnataka, Telangana, and Andhra Pradesh. The Pranhita, however, is the largest tributary of the Godavari River. It is formed by the confluence of the Wardha, Wainganga, and Penganga rivers and contributes significantly to the Godavari's total water volume in the Deccan region.

79. (A) I, II, III, IV
Among the Peninsular river systems, the Godavari has the largest catchment area, covering about 10% of India's total geographical area. The Krishna River basin is the second largest, followed by the Mahanadi and the Cauvery. This order reflects the geographical extent of the drainage basins and the number of states that share the water resources of these major southern Indian rivers.

80. (C) Himalayan Rivers - Antecedent and perennial rivers
Himalayan rivers are characterized as antecedent, meaning they existed before the mountains were uplifted and have carved deep gorges through them. They are also perennial because they are fed by both snowmelt and rainfall. In contrast, Peninsular rivers are generally seasonal and flow over a stable plateau. West-flowing rivers usually form estuaries rather than deltas due to the steep terrain they traverse.

81. (D) I, II and III
The Vaigai River originates in the Varusanadu Hills of the Western Ghats and flows entirely within the state of Tamil Nadu. It passes through the city of Madurai and provides essential water

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for irrigation and drinking. The river eventually drains into the Palk Strait near Ramanathapuram. It is a vital resource for the southern districts of the state, supporting their agricultural economy.

82. (C) Industries require water for cooling, steam, and chemical solvents.
Water resources are vital for the industrial sector in India, where they are used for several critical processes. Industries require large volumes of water for cooling machinery, generating steam for power and manufacturing, and as a solvent in chemical processes. While some industries are moving towards water recycling, the overall demand remains high, making sustainable industrial water management a key national priority.

83. (A) P-IV, Q-I, R-II, S-III
The Brahmaputra River is known by different names as it flows through different regions. It is called the Tsangpo in Tibet, the Dihang in Arunachal Pradesh, and the Brahmaputra in the plains of Assam. When it enters Bangladesh, it is known as the Jamuna. These names reflect the diverse cultural and geographical contexts of one of the world's greatest river systems.

84. (D) Enhancing groundwater recharge and community-led runoff harvesting.
Watershed management programs like Hariyali and Neer-Aanchal focus on the sustainable management of land and water resources at the local level. Their primary objectives are to enhance groundwater recharge through rainwater harvesting and community-led runoff management. These programs aim to improve agricultural productivity and ensure water security in rural areas by involving local people in the conservation and development of their ecosystem.

85. (A) Both A and R are true and R is the correct explanation of A.
The overexploitation of groundwater in Punjab, Haryana, and Tamil Nadu has led to a severe decline in aquifer levels. This is primarily because these states have relied heavily on extensive tubewell irrigation to sustain the intensive agricultural practices introduced during the Green Revolution. The extraction rate has far exceeded the natural recharge, resulting in a sustainable crisis that threatens long-term food security.

86. (C) Indus, Ganga, and Brahmaputra systems
The Himalayan river systems are categorized into three major drainage basins: the Indus, the Ganga, and the Brahmaputra. These rivers originate in the high Himalayas and are fed by both snowmelt and monsoon rainfall, making them perennial. They flow through deep gorges and deposit vast amounts of alluvium in the northern plains, forming the most fertile agricultural regions of the country.

87. (A) Luni - Devastating floods in Kerala
The Luni River is an ephemeral river that flows through the arid regions of Rajasthan and does not cause floods in Kerala. Kerala's floods are typically associated with rivers like the Periyar and Pamba during heavy monsoon seasons. In contrast, the Kosi is famously known as the "Sorrow of Bihar" and the Damodar as the "Sorrow of Bengal" due to their history of flooding.

88. (D) East-flowing rivers join the Bay of Bengal; west-flowing join the Arabian Sea.
The primary geographical difference between east-flowing and west-flowing Peninsular rivers is their drainage destination. Major rivers like the Godavari, Krishna, and Cauvery flow eastward and join the Bay of Bengal, forming large deltas. The Narmada and Tapti flow westward and empty into the Arabian Sea, forming estuaries. This difference is caused by the general tilt of the Peninsular plateau from west to east.

89. (A) I, II and IV
The proposed Cauvery-Godavari link is part of the Peninsular component of the National Perspective Plan. It aims to divert surplus water from the Godavari to the deficit Cauvery basin by integrating the Krishna and Pennar rivers. This project does not propose to reverse the flow of the Cauvery; instead, it seeks to supplement its flow to meet agricultural and domestic needs.

90. (A) They are shallow depressions designed to impound runoff for recharge.
Percolation ponds are small, engineered water bodies constructed in suitable locations to capture surface runoff during the monsoon.

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Their primary purpose is not to store water for direct use, but to allow it to gradually seep into the ground. This process recharges the underlying aquifers, helping to raise the local groundwater table and sustain wells in the surrounding agricultural and residential areas.

91. (A) Poondi, Red Hills, Chembarambakkam
The major reservoirs supplying water to Chennai are located in a general north-to-south sequence. The Poondi Reservoir is the northernmost, followed by the Red Hills Lake (Puzhal Lake). The Chembarambakkam Lake is located further south of these two. Together with the Cholavaram Lake, these reservoirs form the primary surface water storage system for the city, capturing runoff from the surrounding catchment areas.

92. (A) Rural drinking water supply and management
The Jal Jeevan Mission is a significant national scheme focused on providing clean and safe drinking water to every rural household in India. It aims to ensure that all homes have functional tap connections, thereby improving public health and reducing the burden of water collection for rural communities. The mission emphasizes community participation, water source sustainability, and the management of greywater in villages.

93. (A) I, II, IV and V
The National Water Policy 2012 promotes Integrated Water Resources Management, prioritizes drinking water and sanitation, and seeks to enhance water use efficiency. It also addresses the economic pricing of water while protecting vulnerable groups. However, it does not advocate for the abolition of State Water Boards; instead, it encourages cooperation between state and central governments for better management of the resource.

94. (B) Mandating specific crops for all delta farmers to follow in the harvest season.
The Cauvery Water Management Authority (CWMA) was established to implement the Supreme Court's verdict on water sharing. Its functions include regulating the release of water from Karnataka at Biligundlu and monitoring reservoir levels in the basin. However, it does not have the power to mandate specific crops for farmers, as agricultural choices remain under the jurisdiction of the state governments and farmers.

95. (A) Both A and R are true and R is the correct explanation of A.
The Mettur Dam is crucial for the agricultural prosperity of the Cauvery delta region in Tamil Nadu. The storage of water in the dam and its subsequent release are carefully timed to coincide with the planting and growth cycles of the Kuruvai and Samba paddy crops. The success of these harvests, which support millions of farmers, depends entirely on the availability of water from this reservoir.

96. (C) Surface reservoir reliance without groundwater buffering creates vulnerability.
The 2019 "Day Zero" crisis in Chennai demonstrated that relying solely on surface reservoirs is a risky strategy for urban water security. When these reservoirs dried up due to a poor monsoon, the city faced a severe shortage because there was no sufficient groundwater buffer to meet the demand. The crisis highlighted the need for diversified water sources, including rainwater harvesting and desalination.

97. (A) P-II, Q-III, R-I, S-IV
The Mettur Dam is located in the Salem district, and the Bhavanisagar Dam is in the Erode district. The Vaigai Dam is situated in Theni, while the Papanasam Dam is in the Tirunelveli district. These dams are key infrastructure for irrigation and power in their respective regions, demonstrating how water management is decentralized across the various districts of Tamil Nadu to support local needs.

98. (C) It reduces runoff, eases drain loads, and replenishes shallow aquifers.
Integrating rooftop rainwater harvesting in urban centers like Chennai provides several significant benefits. By capturing rain where it falls, it reduces the volume of surface runoff, which helps prevent local street flooding and eases the load on the city's drainage system. More importantly, it allows the harvested water to be used directly or used to replenish shallow aquifers, improving the local water table.

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99. (A) I, II, III, IV
The tributaries of the Cauvery join the main river in a specific sequence from its origin to the sea. The Hemavati and Kabini are located in the upper reaches in Karnataka. As the river enters Tamil Nadu, it is joined by the Bhavani and then the Amaravati. This sequence reflects the progressive accumulation of water volume as the Cauvery travels through its basin area.

100. (D) Kanmais - Subterranean drainage tunnels for sewage
In the traditional water landscape of Tamil Nadu, Kanmais are actually large irrigation tanks, similar to Eris, used primarily in the southern districts. They are not subterranean drainage tunnels for sewage. Other matches like Ooranis for drinking water, Kuttais for livestock, and Eris for agricultural irrigation are correct and represent the specialized functions of different traditional water harvesting structures in the state.

101. (B) I and II
The Namami Gange programme focuses on several key areas, including the development of sewerage treatment infrastructure to stop the flow of untreated waste into the river. It also includes riverfront development and surface cleaning to improve the river's aesthetics and health. However, it does not involve the diversion of the Ganga to western India, as its goal is the rejuvenation of the river.

102. (C) A small pond used for cattle and localized groundwater recharge.
In the traditional water harvesting system of Tamil Nadu, a "Kuttai" is defined as a small pond. These structures are primarily used to provide water for livestock and to support localized groundwater recharge. They are an essential part of the rural landscape, offering a simple and effective way to manage local water needs and maintain the moisture levels of the surrounding soil.

103. (A) P-II, Q-I, R-IV, S-III
The Narmada originates at Amarkantak and forms the Dhuandhar falls, while the Tapti flows through a rift valley from the Satpura range. The Sabarmati begins in the Aravallis and enters the Gulf of Khambhat, and the Mahi is unique for crossing the Tropic of Cancer twice. These west-flowing rivers have distinct geographical features that define their courses toward the Arabian Sea across central India.

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104. (B) 1990
The Cauvery Water Disputes Tribunal was formally constituted by the Government of India in June 1990. This was done following a directive from the Supreme Court and decades of unsuccessful negotiations between the riparian states of Tamil Nadu, Karnataka, Kerala, and the Union Territory of Puducherry. The tribunal was tasked with adjudicating the sharing of the river's waters in a fair and equitable manner.

105. (C) A is true but R is false.
The Godavari River is widely known as the "Dakshin Ganga" because of its great length and its profound religious and economic significance in southern India. However, the reason provided is false; the Godavari does not originate in the Himalayas and is not fed by glaciers. Instead, it originates in the Western Ghats at Trimbakeshwar and is a rain-fed, seasonal Peninsular river.

106. (A) It revives the ancient practice of community participation in maintenance.
The Kudimaramathu scheme is a significant initiative by the Tamil Nadu government to restore and maintain traditional water bodies. Its defining feature is the revival of ancient community-based practices, where local farmers and residents take the lead in desilting tanks and repairing supply channels. This approach fosters a sense of ownership and ensures that water storage structures are kept in good condition.

107. (D) Central Ground Water Board - Maps and regulates resources nationally.
The Central Ground Water Board (CGWB) is the premier national organization responsible for the scientific management, exploration, and regulation of India's groundwater resources. It maps aquifers across the country and provides guidelines for sustainable extraction. Other organizations like the TWAD Board are state-level bodies, and the Jal Jeevan Mission focuses on rural water supply rather than the national regulation of industrial extraction.

108. (A) Challenges include capital needs, ecological shifts, and human displacement.
The Inter-linking of Rivers project in India faces several significant challenges. These include the enormous capital investment required for construction, the potential for major ecological shifts by altering natural river flows, and the large-scale displacement of communities. Additionally, there are concerns about the transfer of pollutants and invasive species between basins, making it a complex issue with profound social and environmental implications.

109. (C) IV only
The Mahanadi river basin covers parts of several states including Chhattisgarh and Odisha and is bounded by the Eastern Ghats. It is true that the river was known for frequent flooding before the Hirakud Dam was built. However, the claim that it does not form a delta is incorrect; the Mahanadi forms a massive delta on the Odisha coast before emptying into the Bay of Bengal.

110. (B) It originates in the Western Ghats near Mahabaleshwar.
The Tapti River does not originate in the Western Ghats near Mahabaleshwar; instead, it begins its journey in the Satpura range in the Betul district of Madhya Pradesh. It is the second-largest west-flowing river in Peninsular India and is often called the "twin" of the Narmada. Its basin covers parts of Madhya Pradesh, Maharashtra, and Gujarat as it flows toward the Arabian Sea.

111. (B) Indira Sagar, Omkareshwar, Sardar Sarovar
The major multipurpose projects on the Narmada River are arranged from east to west as Indira Sagar, Omkareshwar, and Sardar Sarovar. The Indira Sagar and Omkareshwar projects are located in Madhya Pradesh, while the Sardar Sarovar Dam is situated further downstream in Gujarat. This sequence reflects the downstream progression of water management and power generation along the river's course toward its mouth.

112. (C) Supplying drinking water to the Chennai Metropolitan Area.
The Tamil Nadu Water Supply and Drainage (TWAD) Board is responsible for planning and executing water and sewerage schemes for the entire state, except for the Chennai Metropolitan Area. The water supply and sewerage for Chennai are managed by a separate specialized body, the Chennai Metropolitan Water Supply and Sewerage Board (CMWSSB). The TWAD Board focuses on rural areas, town panchayats, and other municipalities.

113. (B) I, II, IV and V
The Indus Waters Treaty of 1960, brokered by the World Bank, gives India exclusive rights over the Eastern rivers. India is also allowed limited use of the Western rivers for non-consumptive and agricultural purposes. Despite multiple conflicts, this treaty has remained functional between India and Pakistan, whereas the total exclusion of Indian usage on Western rivers is false under the treaty's specific provisions.

114. (C) To rejuvenate minor irrigation tanks through community ownership.
The Tamil Nadu government has focused on reviving the Kudimaramathu scheme primarily to rejuvenate thousands of minor irrigation tanks across the state. By promoting community ownership and participation, the scheme aims to ensure that these tanks are desilted and maintained efficiently. This decentralized approach helps improve the storage capacity of local water bodies and enhances the availability of water for irrigation.

115. (A) Both A and R are true and R is the correct explanation of A.
In its Tibetan course, the Brahmaputra River carries a much smaller volume of silt compared to its course in India. This is because the river flows through a cold and dry region in Tibet, where the volume of water is lower and the erosive power is significantly less. As it enters the heavy-rainfall regions of India, the volume and velocity increase, leading to heavy erosion.

116. (D) A measurable rise in the groundwater table in several urban areas.
The mandatory implementation of Rainwater Harvesting (RWH) in Tamil Nadu in 2001 led to a measurable rise in the groundwater table in many urban areas, including parts of Chennai. By forcing buildings to capture and infiltrate rain, the policy helped replenish depleted aquifers. While it did not solve all water problems, it

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proved to be an effective strategy for slowing the decline of groundwater.

117. (A) P-II, Q-I, R-IV, S-III
The Ganga is India's longest river at 2,525 km, followed by the Godavari at 1,465 km. The Krishna River has a length of approximately 1,400 km, and the Cauvery is shorter at about 800 km. These lengths are key geographical facts that define the scale of these river systems and the vast areas they serve for irrigation, transport, and domestic water supply across the country.

118. (C) Surface water and Groundwater
The water resources of India are broadly classified into two primary categories based on their occurrence: surface water and groundwater. Surface water includes all the water found in rivers, lakes, ponds, and reservoirs. Groundwater is the water stored in underground aquifers. Managing both sources together is essential for the country's water security, as they are hydrologically linked and serve different developmental needs.

119. (A) I, II, III, IV
Moving from south to north along the Tamil Nadu coastline, the major rivers join the sea in the following order: the Tamirabarani is the southernmost, followed by the Vaigai. Moving further north, one encounters the Cauvery and then the Palar. This geographical arrangement is important for understanding the drainage patterns and the distribution of water resources across the different climatic zones of the state.

120. (D) Check Dams - Slow water flow; Percolation Ponds - Impound runoff for infiltration.
Check dams and percolation ponds are both important water conservation structures with distinct functions. Check dams are built across streams to slow down the flow of water, which reduces erosion and encourages some infiltration. Percolation ponds, however, are specifically designed to impound large volumes of runoff in shallow depressions to maximize the rate of groundwater recharge into the underlying aquifers.

121. (A) I and II
Chennai's water supply is sourced from multiple locations, including Veeranam Lake, which brings water from the Cauvery basin. The city also relies on coastal desalination plants like the one at Minjur. While the Mettur Dam is critical for the state's agriculture, it does not directly supply drinking water to Chennai. The city's supply is a mix of surface water, groundwater, and desalinated water.

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122. (A) Northern alluvial aquifers yield more water and recharge faster than hard rock aquifers.
The groundwater scenarios in India differ significantly by geography. The northern Indo-Gangetic plains are composed of thick, alluvial deposits that form highly productive aquifers with high storage and recharge rates. In contrast, much of Tamil Nadu is characterized by hard rock terrain, where aquifers are limited to weathered zones and fractures, leading to lower yields and much slower recharge processes compared to the north.

123. (A) P-II, Q-I, R-IV, S-III
Mission Kakatiya is a tank rejuvenation program in Telangana, while Kudimaramathu is its equivalent in Tamil Nadu. The Mukhya Mantri Jal Swavalamban Abhiyan is a water conservation mission in Rajasthan, and Neeru-Chettu is the program implemented by the Andhra Pradesh government. These schemes all aim to improve water security through the restoration of traditional water bodies and local resources.

124. (A) It is a major tributary of the Cauvery supporting agriculture in Tiruppur and Karur.
The Amaravati River is a vital right-bank tributary of the Cauvery River. It flows through the districts of Tiruppur and Karur, providing essential water for irrigation and industrial processes in these economically active regions. The river is fed by the Anamalai Hills and its waters are critical for the agricultural productivity of the surrounding basin before it merges with the main Cauvery.

125. (A) Both A and R are true and R is the correct explanation of A.
The Kosi River is infamously called the "Sorrow of Bihar" because of its destructive flooding history. Originating in the Himalayas, the river carries a massive amount of silt, which deposits in the plains and causes the river to frequently shift its course. These sudden shifts and heavy monsoon flows lead to devastating floods that

displace millions and cause extensive damage to crops and property.

126. (C) Kollidam (Coleroon)
The Kollidam, also known as the Coleroon, is the major northern distributary of the Cauvery River. It branches off from the main river at the Upper Anaicut (Mukkombu) near Tiruchirappalli. While the main Cauvery continues south to feed the delta's irrigation network, the Kollidam carries much of the floodwater and eventually empties into the Bay of Bengal near Chidambaram.

127. (D) Nagarjuna Sagar Dam - Godavari
The Nagarjuna Sagar Dam is built across the Krishna River, not the Godavari. It is one of the largest and most important multipurpose dams in India, located on the border between Telangana and Andhra Pradesh. Other matches like Sardar Sarovar on the Narmada, Hirakud on the Mahanadi, and Tehri on the Bhagirathi are correct and represent key infrastructure projects for the country's development.

128. (C) Deepening drainage lines for faster run-off into the sea
Watershed management focuses on conserving water where it falls through soil conservation, afforestation, and rainwater harvesting. The goal is to slow down the movement of water to enhance infiltration and recharge. Therefore, deepening drainage lines to speed up runoff into the sea is counterproductive to the core principles of watershed management, which seek to retain moisture and prevent the rapid loss of surface water.

129. (B) I, III and IV
The Pennaiyar River, also known as the Dakshina Pinakini, is a seasonal river that empties into the Bay of Bengal near Cuddalore. The Sathanur Dam is a major project constructed across this river to provide irrigation. While much of its course is in Tamil Nadu, it is not entirely within the state's boundaries, as it originates in the Nandi Hills of Karnataka.

130. (D) Storage capacity has been significantly reduced due to heavy siltation.
A major issue facing the Mettur Dam in recent decades is the significant reduction in its effective storage capacity caused by heavy siltation. As the Cauvery River flows through its basin, it carries silt that gradually deposits on the reservoir bed. This process reduces the volume of water the dam can hold, which affects the state's ability to manage water for irrigation during the dry season.

131. (A) Constitution of KWDT-I → Award of KWDT-I → Constitution of KWDT-II → Award of KWDT-II
The legal resolution of the Krishna Water Dispute began with the constitution of the first Krishna Water Disputes Tribunal in 1969. This was followed by its final award in 1976. Due to further disputes, the second tribunal was constituted in 2004, which eventually gave its report and decision in 2010. This sequence reflects the formal institutional adjudication process for resolving inter-state water conflicts.

132. (B) Potential transfer of invasive species and pollutants between basins.
One of the significant ecological risks associated with the inter-linking of rivers is the potential transfer of invasive aquatic species, parasites, and chemical pollutants between previously unconnected river basins. This can disrupt local ecosystems, lead to the loss of native biodiversity, and alter the chemical composition of the water. Such environmental impacts are a major concern for scientists and conservationists studying the project's feasibility.

133. (B) I, II and III
The TWAD Board is a state-level organization in Tamil Nadu responsible for providing water and sewerage facilities to all areas except Chennai. It implements and maintains Combined Water Supply Schemes that serve multiple local bodies. However, it does not generate its own electricity for desalination plants and is a state government entity, not a subsidiary of the Union Ministry of Jal Shakti or the CMWSSB.

134. (D) A surface body formed by constructing an earthen bund across a slope.
The traditional Eri system is characterized by surface water bodies created by constructing an earthen bund or embankment across a natural slope to capture and store monsoon runoff. These tanks are not mechanized or subterranean; instead, they rely on gravity and

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the natural topography to collect water. This simple yet effective design has been used for over a millennium to support agriculture in Tamil Nadu.

135. (A) Both A and R are true and R is the correct explanation of A.
The Cheyyar River is a major tributary of the Palar and serves as a vital water source for the northern districts of Tamil Nadu. It provides essential water for the agricultural and domestic needs of the Tiruvannamalai and Kanchipuram regions. Its flow is particularly important for recharging local groundwater, which is extensively used by the communities in these districts throughout the year.

136. (B) 2024
The Jal Jeevan Mission, launched in 2019, set a clear target to provide Functional Household Tap Connections to every rural household in India by the year 2024. This ambitious goal is designed to ensure that no rural family is left without access to safe and sufficient drinking water. The mission emphasizes sustainable water management and involves local communities in the planning and execution of projects.

137. (A) P-III, Q-IV, R-II, S-I
The Ganga originates from the Gangotri Glacier, and the Yamuna begins at the Yamunotri Glacier. The Indus River has its source at the Bokhar Chu Glacier in Tibet, and the Godavari originates at Trimbakeshwar in Maharashtra. Knowing these distinct sources is essential for understanding the hydrological characteristics and the geographical reach of India's most significant and diverse river systems.

138. (C) It begins where the river splits into the Kollidam and main Cauvery.
The Cauvery delta, often called the "Garden of Southern India," officially begins where the river bifurcates into the northern Kollidam and the southern main Cauvery at the Upper Anaicut near Tiruchirappalli. This bifurcation creates a vast network of distributaries and canals that irrigate the fertile plains of Thanjavur, Nagapattinam, and surrounding districts before the river eventually empties into the Bay of Bengal.

139. (A) I, II, III, IV
Moving from west to east along the northern bank of the Brahmaputra in India, the major right-bank tributaries join in the following order: Teesta, Manas, Kameng, and Subansiri. These rivers originate in the high Himalayas and flow southwards to meet the Brahmaputra in the plains of Assam. Each tributary contributes significantly to the silt and water volume of the massive Brahmaputra river system.

140. (B) Nirmal Ganga - Achieving unpolluted flow by treating sewage and effluents.
The Namami Gange programme aims to achieve the twin objectives of pollution abatement and rejuvenation of the National River Ganga. The Nirmal Ganga component specifically focuses on achieving unpolluted flow by implementing sewerage treatment infrastructure and controlling industrial effluents. It ensures that only treated water enters the river, preserving its chemical and biological integrity while allowing for a cleaner and healthier river environment.

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CHAPTER 04
Soil and Minerals

1. The process of soil formation is highly dependent on various natural factors. Which of the following refers to the unweathered hard rock that lies beneath all other soil layers?
(A) Bedrock
(B) Topsoil
(C) Subsoil
(D) Parent rock
(E) Answer not known

2. The following question consists of two statements — Assertion (A) and Reason (R). Answer the question by selecting the appropriate option.
Assertion (A): The 'B' horizon of the soil profile is characterized by the accumulation of leached minerals like iron and aluminium oxides.
Reason (R): The 'B' horizon is the uppermost layer of the soil profile where maximum biological activity takes place.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

3. Among the five major factors of soil formation, which factor primarily determines the basic mineral composition and color of the newly formed soil?
(A) Parent material
(B) Regional climate patterns
(C) Surface topography and slope
(D) Living organisms and humus
(E) Answer not known

4. Match the soil horizons in List I with their corresponding characteristics in List II.
List I: (Soil Horizon)
P. O Horizon
Q. A Horizon
R. B Horizon
S. C Horizon
List II: (Characteristics)
I. Subsoil with mineral accumulation
II. Weathered parent rock material
III. Topsoil rich in organic matter
IV. Uppermost layer of organic debris
(A) P-IV, Q-III, R-I, S-II
(B) P-III, Q-IV, R-II, S-I
(C) P-IV, Q-I, R-III, S-II
(D) P-I, Q-II, R-III, S-IV
(E) Answer not known

5. The Indian Council of Agricultural Research (ICAR) has classified Indian soils into how many major categories based on their genesis, color, composition, and location?
(A) Six
(B) Seven
(C) Eight
(D) Nine
(E) Answer not known

6. Consider the following statements regarding Alluvial soil in India:
I. It is highly fertile and is mainly found in the northern plains and river valleys.
II. It is poor in potash but rich in phosphorus.
III. It supports a wide variety of crops including wheat, rice, and sugarcane.
Which of the above statement(s) is/are correct?
(A) I and II only
(B) I and III only
(C) II and III only
(D) I only
(E) Answer not known

7. In the context of alluvial soils, what is the term used to describe the older alluvium that forms terraces above the flood plains and is characterized by calcareous nodules?
(A) Khadar
(B) Bhabar

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(C) Terai
(D) Bangar
(E) Answer not known

8. Which of the following pairs is correctly matched?
(A) Black Soil - Excellent water retention capacity for cotton cultivation
(B) Red Soil - Highly suitable for intensive wet paddy cultivation
(C) Laterite Soil - Naturally rich in organic matter and nitrogen
(D) Arid Soil - Dominantly found in the northeastern states of India
(E) Answer not known

9. The red color of red and yellow soils in India is primarily due to the wide diffusion of which of the following elements in crystalline and metamorphic rocks?
(A) Calcium carbonate
(B) Iron
(C) Magnesium
(D) Potassium
(E) Answer not known

10. Which of the following options represents the correct sequence of a standard soil profile from the surface downwards?
(A) O, A, E, B, C, R
(B) R, C, B, E, A, O
(C) O, B, A, C, E, R
(D) A, O, B, C, R, E
(E) Answer not known

11. Laterite soils are generally formed under conditions of high temperature and heavy rainfall. This soil is the result of intense leaching which primarily washes away which soil components?
(A) Silica and Soluble salts
(B) Iron and Aluminium
(C) Humus and Nitrogen
(D) Coarse sand and gravel
(E) Answer not known

12. The following question consists of two statements — Assertion (A) and Reason (R). Answer the question by selecting the appropriate option.
Assertion (A): Arid and desert soils lack humus and organic matter.
Reason (R): The dry climate, high temperature, and accelerated evaporation in desert regions inhibit significant vegetative growth.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

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13. Consider the following statements regarding Forest and Mountain soils:
I. They are formed in areas with sufficient rainfall and forest cover.
II. They are generally rich in humus but deficient in potash, phosphorus, and lime.
III. Their character changes with mountain environment and altitude.
IV. They are uniform in texture across all mountain elevations.
Which of the above statement(s) is/are correct?
(A) I, II and III
(B) II, III and IV
(C) I, III and IV
(D) I and II
(E) Answer not known

14. Saline and alkaline soils are typically uncultivable due to the accumulation of toxic salts. Which of the following is a primary cause for the development of such soils in agricultural areas?
(A) Excessive contour ploughing and improper tillage
(B) Intense leaching of minerals by heavy rains
(C) Over-irrigation leading to capillary action
(D) Repeated cultivation of leguminous crops
(E) Answer not known

15. Match the soil types in List I with their highly suitable crops in List II.
List I: (Soil Type)
P. Black soil
Q. Laterite soil
R. Alluvial soil
S. Peaty soil
List II: (Suitable Crop)
I. Cashew nuts and tapioca
II. Mangrove and salt-tolerant plants

III. Cotton and sorghum
IV. Wheat and paddy
(A) P-III, Q-I, R-IV, S-II
(B) P-IV, Q-II, R-I, S-III
(C) P-III, Q-IV, R-I, S-II
(D) P-I, Q-III, R-II, S-IV
(E) Answer not known

16. Peaty and marshy soils are predominantly found in areas of heavy rainfall and high humidity. In India, where are these soils most significantly distributed?
(A) Malwa plateau and the extensive basaltic formations of the Deccan trap region
(B) Arid regions of Western Rajasthan and the northern parts of Gujarat state
(C) Rain shadow regions located on the eastern side of the Western Ghats range
(D) North Bihar, south Uttarakhand, and coastal regions of Bengal, Odisha, and Tamil Nadu
(E) Answer not known

17. Consider the following statements regarding soil degradation and erosion:
I. Soil degradation involves the decline in soil quality and agricultural productivity.
II. Sheet erosion occurs predominantly on steep slopes rather than flat lands.
III. Gully erosion cuts deep channels and can make land unfit for cultivation, forming badlands.
IV. Deforestation and overgrazing are major anthropogenic causes of soil erosion.
V. Wind erosion is most active in arid and semi-arid regions.
Which of the above statement(s) is/are correct?
(A) I, II, III and IV
(B) I, III, IV and V
(C) II, III, IV and V
(D) I, IV and V
(E) Answer not known

18. Which of the following pairs is incorrectly matched regarding soil distribution in India?
(A) Black Soil - Maharashtra and Gujarat
(B) Laterite Soil - Western Ghats and Meghalaya
(C) Alluvial Soil - Central parts of Madhya Pradesh
(D) Arid Soil - Arid regions of Western Rajasthan and parts of Gujarat
(E) Answer not known

19. Badland topography, resulting from severe gully erosion, is most prominently found in which of the following river basins in India?
(A) Chambal basin
(B) Cauvery basin
(C) Narmada basin
(D) Godavari basin
(E) Answer not known

20. Arrange the following steps of soil formation in the correct chronological sequence.
I. Addition of organic matter by pioneer species
II. Weathering of parent rock material
III. Formation of distinct soil horizons
IV. Accumulation of fine minerals and subsoil development
(A) II, I, IV, III
(B) I, II, III, IV
(C) II, IV, I, III
(D) IV, II, I, III
(E) Answer not known

21. Which soil conservation method involves constructing broad flat steps along the contours of steep slopes to reduce surface runoff and prevent soil erosion?
(A) Contour ploughing
(B) Terracing
(C) Strip cropping
(D) Shelter belts
(E) Answer not known

22. The following question consists of two statements — Assertion (A) and Reason (R). Answer the question by selecting the appropriate option.
Assertion (A): Shelter belts are rows of trees planted in coastal and dry regions.
Reason (R): Shelter belts primarily help in fixing nitrogen in the soil to enhance crop fertility.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

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23. What is the primary objective of the Soil Health Card Scheme introduced by the Government of India?
(A) To provide free chemical fertilizers to all registered marginal farmers
(B) To map soil erosion and degradation vulnerability across the entire nation
(C) To distribute certified hybrid seeds suitable for various Indian soil types
(D) To assess soil nutrient status and advise farmers on optimal fertilizer dosage
(E) Answer not known

24. Match the soil conservation methods in List I with their correct definitions in List II.
List I: (Method)
P. Contour ploughing
Q. Shelter belts
R. Afforestation
S. Crop rotation
List II: (Definition)
I. Growing different crops in succession to maintain soil fertility
II. Planting lines of trees to break wind speed
III. Ploughing parallel to the natural shape of the hill
IV. Large scale planting of trees to prevent topsoil removal
(A) P-III, Q-II, R-IV, S-I
(B) P-II, Q-III, R-I, S-IV
(C) P-III, Q-IV, R-II, S-I
(D) P-I, Q-II, R-III, S-IV
(E) Answer not known

25. Which of the following is the most dominant soil type in Tamil Nadu, covering approximately two-thirds of the state's total geographical area?
(A) Black Soil
(B) Red Soil
(C) Alluvial Soil
(D) Laterite Soil
(E) Answer not known

26. Consider the following statements about Red soil in Tamil Nadu:
I. It is rich in nitrogen and humus.
II. It is highly porous and has poor water retentive capacity.
III. It predominantly supports crops like groundnut and millets under rainfed conditions.
Which of the above statement(s) is/are correct?
(A) I and II only
(B) II and III only
(C) I and III only
(D) III only
(E) Answer not known

27. Despite its general deficiency in major nutrients, red soil in Tamil Nadu can yield good crops under which of the following specific conditions?
(A) With organic manure and proper irrigation facilities
(B) When waterlogged continuously during the monsoon months
(C) When cultivated only with commercial plantation crops
(D) When mixed with coastal saline sands from the shore
(E) Answer not known

28. Which of the following pairs concerning the soils of Tamil Nadu and their distribution is correctly matched?
(A) Alluvial Soil - Nilgiris and Kodaikanal
(B) Laterite Soil - Cauvery Delta
(C) Black Cotton Soil - Coimbatore and Madurai
(D) Saline Soil - Dharmapuri and Krishnagiri
(E) Answer not known

29. The alluvial soil in Tamil Nadu is highly concentrated in the many areas of the Cauvery delta region. Which crop is most extensively cultivated in this fertile tract?
(A) Tea
(B) Cotton
(C) Coffee
(D) Paddy
(E) Answer not known

30. Arrange the major soil types in Tamil Nadu in descending order based on their geographical extent.
(A) Black Soil, Red Soil, Alluvial Soil, Laterite Soil
(B) Red Soil, Black Soil, Alluvial Soil, Laterite Soil
(C) Red Soil, Alluvial Soil, Black Soil, Laterite Soil
(D) Alluvial Soil, Red Soil, Black Soil, Laterite Soil
(E) Answer not known

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31. Black cotton soil in Tamil Nadu is predominantly found in the western districts. Which characteristic makes it highly suitable for cotton cultivation?
(A) High acidity and low pH levels in the profile
(B) Excellent moisture retention and self-ploughing nature
(C) High proportion of sand facilitating very rapid drainage
(D) Excessive leaching of vital minerals and nutrients
(E) Answer not known

32. The following question consists of two statements — Assertion (A) and Reason (R). Answer the question by selecting the appropriate option.
Assertion (A): Laterite soil in Tamil Nadu is largely confined to the hilly areas and higher elevations.
Reason (R): The flat coastal plains of Tamil Nadu experience intense leaching which is essential for laterite formation.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

33. Consider the following statements about saline and coastal soils in Tamil Nadu:
I. They are mainly found along the Coromandel coast.
II. High tide inundation is a major cause of their salinity.
III. They are highly suitable for the cultivation of traditional paddy varieties without reclamation.
IV. Casuarina and certain salt-tolerant species thrive in these soils.
Which of the above statement(s) is/are correct?
(A) I, II and IV
(B) II, III and IV
(C) I and III
(D) I, II and III
(E) Answer not known

34. Which of the following amendments is most commonly applied to reclaim saline and alkaline soils for agricultural use?
(A) Urea
(B) Potassium chloride
(C) Gypsum
(D) Sodium chloride
(E) Answer not known

35. Match the following districts of Tamil Nadu in List I with their predominantly found soil types in List II.
List I: (District)
P. Thanjavur
Q. Ramanathapuram
R. Coimbatore
S. Nilgiris
List II: (Soil Type)
I. Black Soil
II. Alluvial Soil
III. Laterite Soil
IV. Coastal/Saline Soil
(A) P-II, Q-IV, R-I, S-III
(B) P-I, Q-III, R-II, S-IV
(C) P-II, Q-I, R-IV, S-III
(D) P-III, Q-II, R-I, S-IV
(E) Answer not known

36. Minerals are naturally occurring inorganic substances with a definite chemical composition. How are minerals broadly classified based on their composition?
(A) Renewable and Non-renewable
(B) Ferrous and Combustible
(C) Extrusive and Intrusive
(D) Metallic and Non-metallic
(E) Answer not known

37. Consider the following statements regarding the Peninsular Shield of India:
I. It is considered the mineral storehouse of India.
II. It predominantly contains reserves of coal, iron ore, and manganese.
III. The rocks found here are primarily young sedimentary formations.
IV. It accounts for the majority of India's metallic mineral production.
V. Major rivers here flow over rich mineral belts like the Chota Nagpur plateau.
Which of the above statement(s) is/are correct?

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(A) I, II, IV and V
(B) II, III, IV and V
(C) I, III and V
(D) I, II and IV
(E) Answer not known

38. Which of the following pairs regarding mineral classification is incorrectly matched?
(A) Iron ore - Metallic mineral
(B) Mica - Non-metallic mineral
(C) Limestone - Metallic mineral
(D) Bauxite - Metallic mineral
(E) Answer not known

39. Among the various types of iron ores found in India, which ore contains the highest percentage of iron content and possesses excellent magnetic qualities?
(A) Hematite
(B) Limonite
(C) Siderite
(D) Magnetite
(E) Answer not known

40. Arrange the following types of coal in the correct sequence from lowest carbon content to highest carbon content.
I. Bituminous
II. Anthracite
III. Peat
IV. Lignite
(A) III, IV, I, II
(B) IV, III, I, II
(C) I, II, IV, III
(D) III, I, IV, II
(E) Answer not known

41. India has abundant resources of iron ore. Which state is typically the largest producer of iron ore in India, housing major mines like Badampahar?
(A) Rajasthan
(B) Odisha
(C) Kerala
(D) Punjab
(E) Answer not known

42. The following question consists of two statements — Assertion (A) and Reason (R). Answer the question by selecting the appropriate option.
Assertion (A): The Damodar Valley region is often referred to as the 'Ruhr of India'.
Reason (R): The Damodar Valley contains the most significant and largest reserves of Gondwana coal in India.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

43. The Oil and Natural Gas Corporation (ONGC) plays a vital role in India's energy sector. Which of the following is the largest offshore oil field in India?
(A) Mumbai High Field
(B) Digboi Field
(C) Ankleshwar Field
(D) Godavari Basin Field
(E) Answer not known

44. Match the important iron ore mines in List I with their respective states in List II.
List I: (Mine)
P. Bailadila
Q. Kudremukh
R. Noamundi
S. Dalli-Rajhara
List II: (State)
I. Jharkhand
II. Chhattisgarh
III. Karnataka
IV. Chhattisgarh (Central)
(A) P-II, Q-III, R-I, S-IV
(B) P-IV, Q-III, R-II, S-I
(C) P-III, Q-I, R-IV, S-II
(D) P-I, Q-IV, R-III, S-II
(E) Answer not known

45. Bauxite is a crucial mineral resource for modern industry. It is the principal ore used in the extraction of which important metal?
(A) Copper
(B) Zinc
(C) Lead
(D) Aluminium
(E) Answer not known

46. Consider the following statements regarding Manganese in India:

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I. It is heavily used in the manufacturing of steel and ferro-manganese alloys.
II. It is also utilized in the production of bleaching powder, insecticides, and paints.
III. India holds a complete monopoly over global manganese reserves.
Which of the above statement(s) is/are correct?
(A) I and II only
(B) II and III only
(C) I and III only
(D) I only
(E) Answer not known

47. Copper mining in India is geographically concentrated in a few regions. The Khetri mines, famous for copper extraction, are located in which state?
(A) Madhya Pradesh
(B) Rajasthan
(C) Jharkhand
(D) Andhra Pradesh
(E) Answer not known

48. Which of the following pairs of mineral and its major producing state in India is correctly matched?
(A) Bauxite - Extensive deposits in Punjab
(B) Manganese - Large mines in Haryana
(C) Coal - Significant reserves in Kerala
(D) Copper - Madhya Pradesh
(E) Answer not known

49. Mica has excellent dielectric strength, low power loss factor, and insulating properties. Which two states are historically the dominant producers of Mica in India?
(A) Jharkhand and Andhra Pradesh
(B) Gujarat and Maharashtra
(C) Tamil Nadu and Kerala
(D) Assam and Meghalaya
(E) Answer not known

50. Arrange the following geological periods associated with major coal formations in India in sequence from older to younger.
I. Gondwana
II. Tertiary
(A) I, II
(B) II, I
(C) Dharwar, Cuddapah
(D) Cuddapah, Vindhyan
(E) Answer not known

51. Limestone is an essential non-metallic mineral required by various core industries. It serves as the primary raw material for which of the following industries?
(A) Cement Industry
(B) Fertilizer Industry
(C) Petrochemical Industry
(D) Textile Industry
(E) Answer not known

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52. The following question consists of two statements — Assertion (A) and Reason (R). Answer the question by selecting the appropriate option.
Assertion (A): Mica is indispensable in the electrical and electronic industries.
Reason (R): Mica is a highly malleable metallic mineral that efficiently conducts electricity.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

53. Consider the following statements regarding Coal in India:
I. It is broadly classified into Gondwana coal and Tertiary coal.
II. Lignite is the highest quality coal found extensively in the Damodar Valley.
III. Coal meets a significant portion of India's commercial energy requirements.
IV. Metallurgical coal is primarily used for smelting iron in blast furnaces.
Which of the above statement(s) is/are correct?
(A) I, II and III
(B) I, III and IV
(C) II and IV
(D) I, II and IV
(E) Answer not known

54. Natural gas is considered an environmentally friendly fuel compared to other fossil fuels. In India, significant natural gas reserves are primarily associated with which of the following?
(A) Deep igneous and metamorphic rock

formations
(B) Metamorphic zones across the Greater Himalayas
(C) Petroleum deposits in offshore and onshore sedimentary basins
(D) Bauxite mining areas and aluminium refineries
(E) Answer not known

55. Match the mineral ores in List I with their corresponding extracted metals in List II.
List I: (Ore)
P. Bauxite
Q. Galena
R. Hematite
S. Chalcopyrite
List II: (Metal)
I. Iron
II. Aluminium
III. Copper
IV. Lead
(A) P-II, Q-IV, R-I, S-III
(B) P-I, Q-III, R-IV, S-II
(C) P-II, Q-I, R-IV, S-III
(D) P-IV, Q-II, R-III, S-I
(E) Answer not known

56. Odisha is highly significant in the Indian mineral map. It is the leading producer of which of the following non-ferrous minerals?
(A) Bauxite
(B) Gold
(C) Diamond
(D) Copper
(E) Answer not known

57. Consider the following statements regarding the distribution of Copper in India:
I. India is critically deficient in the reserve and production of copper.
II. The Balaghat mines in Madhya Pradesh produce over half of India's copper.
III. Copper is predominantly found in alluvial soil deposits.
IV. The Singhbhum district of Jharkhand is a major copper-producing region.
V. Copper's main industrial use in India is in the electrical cables industry.
Which of the above statement(s) is/are correct?
(A) I, II, IV and V
(B) II, III, IV and V
(C) I, III, IV and V
(D) I, II and V
(E) Answer not known

58. Which of the following pairs of coal mines and their respective states is incorrectly matched?
(A) Jharia - Jharkhand
(B) Neyveli - Andhra Pradesh
(C) Raniganj - West Bengal
(D) Singrauli - Madhya Pradesh
(E) Answer not known

59. The Malanjkhand mine is the largest open-cast mining project in India for a specific mineral. Which mineral is primarily extracted here?
(A) Copper
(B) Iron ore
(C) Manganese
(D) Limestone
(E) Answer not known

60. Arrange the following iron ores in descending order based on their theoretical maximum iron content.
I. Siderite
II. Hematite
III. Magnetite
IV. Limonite
(A) III, II, IV, I
(B) II, III, I, IV
(C) III, I, II, IV
(D) II, IV, III, I
(E) Answer not known

61. Tamil Nadu holds a prominent position in India for the reserves and production of which specific type of low-grade brown coal?
(A) Anthracite
(B) Bituminous
(C) Peat
(D) Lignite
(E) Answer not known

62. The following question consists of two statements — Assertion (A) and Reason (R). Answer the question by selecting the appropriate option.
Assertion (A): The beach sands of Kanyakumari and Tirunelveli districts are rich in heavy minerals like ilmenite and rutile.
Reason (R): These minerals are deposited by

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the continuous action of waves eroding the coastal alluvial soils over millions of years.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

63. Monazite sand found in the coastal areas of Tamil Nadu and Kerala is a strategic mineral because it is a primary source of which radioactive element?
(A) Uranium
(B) Thorium
(C) Plutonium
(D) Radium
(E) Answer not known

64. Match the minerals of Tamil Nadu in List I with their major associated locations/districts in List II.
List I: (Mineral)
P. Lignite
Q. Magnesite
R. Graphite
S. Beach sand minerals
List II: (Location/District)
I. Salem
II. Sivaganga
III. Kanyakumari
IV. Neyveli
(A) P-IV, Q-I, R-II, S-III
(B) P-I, Q-IV, R-III, S-II
(C) P-IV, Q-II, R-I, S-III
(D) P-III, Q-I, R-II, S-IV
(E) Answer not known

65. Tamil Nadu is a leading exporter of dimensional stones. Which district in Tamil Nadu is most famous for its extensive granite quarrying and polishing industry?
(A) Krishnagiri
(B) Thanjavur
(C) Madurai
(D) Nagapattinam
(E) Answer not known

66. Consider the following statements about Graphite in Tamil Nadu:
I. It is found in significant quantities in the Sivaganga district.
II. Graphite is highly reactive and combustible at room temperature.
III. It is widely used in the manufacture of dry cell batteries and lubricants.
Which of the above statement(s) is/are correct?
(A) I and II only
(B) I and III only
(C) II and III only
(D) I only
(E) Answer not known

67. The National Mineral Policy 2019 was introduced to ensure sustainable and equitable mining. Which of the following is a key objective of this policy?
(A) To encourage zero waste mining and sustainable development
(B) To completely ban private sector participation in all mining activities
(C) To export all raw minerals without domestic value addition
(D) To centralize all minor mineral regulation to the Union Government
(E) Answer not known

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68. Which of the following pairs linking a beach sand mineral to its primary extracted element is correctly matched?
(A) Rutile - Zirconium
(B) Monazite - Iron
(C) Garnet - Thorium
(D) Ilmenite - Titanium
(E) Answer not known

69. The Mines and Minerals (Development and Regulation) Act, commonly known as the MMDR Act, was significantly amended recently to promote transparency. What major mechanism was introduced for granting mineral concessions?
(A) First-come-first-serve basis
(B) Transparent competitive auction process
(C) Discretionary allotment by State Governors
(D) Lottery system for minor minerals
(E) Answer not known

70. Arrange the following geological rock systems in India in correct chronological sequence from oldest to youngest.

I. Archean
II. Dharwar
III. Cuddapah
IV. Vindhyan
(A) I, II, III, IV
(B) II, I, IV, III
(C) IV, III, II, I
(D) I, IV, II, III
(E) Answer not known

71. Mining operations often lead to severe environmental and social concerns. Which of the following is a direct ecological consequence of large-scale open-cast mining?
(A) Enhanced groundwater recharge
(B) Increase in local biodiversity
(C) Formation of fertile topsoil
(D) Deforestation and habitat destruction
(E) Answer not known

72. The following question consists of two statements — Assertion (A) and Reason (R). Answer the question by selecting the appropriate option.
Assertion (A): The Indian Rare Earths Limited (IREL) operates processing plants in Thoothukudi and Kanyakumari.
Reason (R): These coastal districts of Tamil Nadu are rich in beach placer deposits like monazite, zircon, and garnet.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

73. Consider the following statements regarding the Neyveli Lignite Corporation (NLC):
I. It is a Navratna public sector enterprise.
II. It predominantly mines lignite which is used for thermal power generation.
III. The power generated by NLC is exclusively consumed by Tamil Nadu.
IV. It operates significant open-cast lignite mines in the Cuddalore district.
Which of the above statement(s) is/are correct?
(A) I, II and IV
(B) I, III and IV
(C) II and IV
(D) I, II and III
(E) Answer not known

74. Tribal displacement is a significant socio-economic issue associated with mining in India. This is primarily because major mineral belts, such as the Chota Nagpur plateau, overlap with which regions?
(A) Scheduled areas with high tribal populations and forest cover
(B) Densely populated urban centers and industrial hubs
(C) Coastal plains with significant fishing activity
(D) Arid desert regions with minimal vegetation cover
(E) Answer not known

75. Match the following minerals in List I with their strategic or industrial importance in List II.
List I: (Mineral)
P. Monazite
Q. Zircon
R. Garnet
S. Ilmenite
List II: (Importance)
I. Source of Titanium dioxide for pigments
II. Abrasive industry
III. High-temperature ceramics and refractories
IV. Source of Thorium for nuclear energy
(A) P-IV, Q-III, R-II, S-I
(B) P-III, Q-IV, R-I, S-II
(C) P-I, Q-II, R-III, S-IV
(D) P-IV, Q-I, R-II, S-III
(E) Answer not known

76. Limestone is widely distributed in Tamil Nadu and supports a large network of cement factories. Which of the following districts is particularly noted for extensive limestone deposits?
(A) Kanyakumari
(B) Ariyalur
(C) Chennai
(D) Nilgiris
(E) Answer not known

77. Consider the following statements about the mineral resources of Tamil Nadu:
I. Tamil Nadu lacks significant reserves of metallurgical coal.
II. It is the leading state in terms of lignite

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reserves in India.
III. Minor minerals like rough stone and gravel are quarried extensively.
IV. Iron ore deposits found in Tamil Nadu are predominantly of the low-grade magnetite variety.
V. It has a monopoly over diamond mining in South India.

Which of the above statement(s) is/are correct?
(A) I, II, III and IV
(B) II, III, IV and V
(C) I, III, IV and V
(D) I, II, IV and V
(E) Answer not known

78. Which of the following pairs linking a Tamil Nadu mining location to its primary extracted resource is correctly matched?
(A) Neyveli - Industrial Bauxite mining
(B) Manavalakurichi - Beach sand minerals
(C) Salem - Major Lignite coal mining
(D) Ariyalur - Extensive Copper extraction
(E) Answer not known

79. What legal framework mandates prior environmental clearance for starting new mining projects or expanding existing ones in India?
(A) The Environment (Protection) Act, 1986
(B) The Mines Act, 1952 for worker safety
(C) The Forest Rights Act, 2006 for tribes
(D) The Factories Act, 1948 for industries
(E) Answer not known

80. Arrange the following coastal districts of Tamil Nadu in order from North to South.
I. Chennai
II. Kanyakumari
III. Cuddalore
IV. Thoothukudi
(A) I, III, IV, II
(B) I, IV, III, II
(C) III, I, IV, II
(D) I, III, II, IV
(E) Answer not known

81. In the context of soil formation, what critical role does 'Time' play as a passive factor?
(A) It dictates the immediate temperature of the parent rock.
(B) It directly introduces primary nitrogen into the topsoil.
(C) It creates the topographic slope of the land.
(D) It determines the thickness of the soil profile and its maturity.
(E) Answer not known

82. The following question consists of two statements — Assertion (A) and Reason (R). Answer the question by selecting the appropriate option.
Assertion (A): Organisms like earthworms and microorganisms play a negligible role in soil formation.
Reason (R): Soil formation is purely a physical and chemical process driven by climate and parent rock.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

83. The extraordinary water retention capacity of black soil is mainly attributed to the presence of which specific type of clay mineral?
(A) Kaolinite
(B) Montmorillonite
(C) Illite
(D) Chlorite
(E) Answer not known

84. Match the soil types in List I with their characteristic features in List II.
List I: (Soil Type)
P. Desert Soil
Q. Peaty Soil
R. Black Soil
S. Red Soil
List II: (Feature)
I. Develops deep cracks during summer
II. Rich in iron oxide, poor in lime
III. High concentration of soluble salts, sandy texture
IV. High organic matter, heavy and highly acidic
(A) P-III, Q-IV, R-I, S-II
(B) P-I, Q-II, R-III, S-IV
(C) P-III, Q-I, R-IV, S-II
(D) P-IV, Q-III, R-II, S-I

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(E) Answer not known

85. Khadar soil, a type of alluvial soil, is preferred for intensive agriculture. What makes Khadar more fertile than Bangar?
(A) It is continuously renewed by annual floods depositing fresh fine silt.
(B) It is formed of older alluvium with kankar nodules.
(C) It contains high amounts of toxic salts and alkalinity.
(D) It is found only at high altitudes with low temperatures.
(E) Answer not known

86. Consider the following statements about Bangar soil:
I. It is the older alluvium present in the plains.
II. It is less fertile compared to Khadar soil.
III. It lies below the flood levels of the rivers.
Which of the above statement(s) is/are correct?
(A) I and II only
(B) I and III only
(C) II and III only
(D) I only
(E) Answer not known

87. Laterite soils are generally considered poor for agriculture without heavy manuring. What is the primary reason for their low fertility?
(A) Severe loss of nutrients like silica and lime due to leaching
(B) High concentration of organic carbon and humus
(C) Excessive waterlogging preventing root respiration
(D) Extreme alkaline nature and high sodium content
(E) Answer not known

88. Which of the following pairs regarding soil degradation types is incorrectly matched?
(A) Sheet erosion - Uniform removal of topsoil by surface runoff
(B) Rill erosion - Formation of small, shallow channels
(C) Gully erosion - Formation of deep, wide channels
(D) Wind erosion - Most prominent in heavy rainfall areas
(E) Answer not known

89. Contour ploughing is a widely recommended soil conservation method in hilly areas. How does it effectively prevent soil erosion?
(A) By creating vertical furrows that channel water down very quickly
(B) By ploughing at right angles to the slope, creating barriers to downward water flow
(C) By planting rows of trees in straight vertical lines
(D) By entirely covering the soil with heavy plastic mulching
(E) Answer not known

90. Arrange the following water-induced soil erosion stages in increasing order of severity.
I. Splash erosion
II. Sheet erosion
III. Rill erosion
IV. Gully erosion
(A) I, II, III, IV
(B) IV, III, II, I
(C) II, I, IV, III
(D) I, III, II, IV
(E) Answer not known

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91. Afforestation plays a dual role in soil conservation. It binds the soil with roots and also prevents erosion by intercepting which natural phenomenon?
(A) Groundwater capillary action
(B) Seismic activities
(C) Magnetic anomalies in the parent rock
(D) Direct impact of falling raindrops (Splash erosion)
(E) Answer not known

92. The following question consists of two statements — Assertion (A) and Reason (R). Answer the question by selecting the appropriate option.
Assertion (A): The application of gypsum is a standard practice for reclaiming alkaline soils.
Reason (R): Gypsum supplies calcium which replaces the excess sodium attached to the soil particles, facilitating its leaching.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

(E) Answer not known

93. Consider the following statements about Red and Yellow soils:
I. They develop on crystalline igneous rocks in areas of low rainfall.
II. They appear red due to the diffusion of iron in crystalline and metamorphic rocks.
III. They look yellow when they occur in a hydrated form.
IV. They are naturally highly fertile and rich in nitrogen and phosphorus.
Which of the above statement(s) is/are correct?
(A) I, II and III
(B) II, III and IV
(C) I and III
(D) I, II and IV
(E) Answer not known

94. Peaty soils possess unique characteristics due to their formation environment. Which of the following is a key feature of peaty soils?
(A) Black, heavy, and highly acidic nature
(B) Very low organic matter content
(C) High proportion of sand and gravel
(D) Exceptional suitability for cotton cultivation
(E) Answer not known

95. Match the soil conservation techniques in List I with their appropriate descriptions in List II.
List I: (Technique)
P. Mulching
Q. Strip cropping
R. Rock dam
S. Terracing
List II: (Description)
I. Piling rocks across gullies to slow down water flow
II. Cutting broad flat steps on steep slopes
III. Covering bare ground between plants with organic matter
IV. Growing alternating bands of different crops
(A) P-III, Q-IV, R-I, S-II
(B) P-IV, Q-III, R-II, S-I
(C) P-II, Q-I, R-IV, S-III
(D) P-I, Q-II, R-III, S-IV
(E) Answer not known

96. Red soil occupies the largest area in Tamil Nadu. It is predominantly distributed across central and southern districts. Which of the following districts does NOT have a significant presence of red soil?
(A) Sivaganga
(B) Ramanathapuram
(C) Madurai
(D) Nagapattinam
(E) Answer not known

97. Consider the following statements regarding the standard soil profile horizons:
I. The 'O' horizon consists of undecomposed or partially decomposed organic matter.
II. The 'A' horizon is the topsoil where organic matter mixes with mineral matter.
III. The 'E' horizon is the zone of maximum accumulation of clays and oxides.
IV. The 'C' horizon contains weathered parent material.
V. The 'R' horizon is the unweathered bedrock.
Which of the above statement(s) is/are correct?
(A) I, II, IV and V
(B) I, II, III and IV
(C) II, III, IV and V
(D) I, III, IV and V
(E) Answer not known

98. Which of the following pairs of local Indian soil names and their corresponding ICAR classification is correctly matched?
(A) Regur - Laterite Soil and hilly formations
(B) Usara - Saline and Alkaline Soil
(C) Khadar - Black Soil and basaltic lava rocks
(D) Bhangar - Red Soil and metamorphic rock zones
(E) Answer not known

99. Laterite soil derives its name from the Latin word 'later', which means brick. Why is this soil historically significant in construction?
(A) It hardens greatly like a brick upon exposure to air and drying.
(B) It can be easily molded into any shape without kiln firing.
(C) It possesses naturally occurring cementitious binding properties.
(D) It melts at low temperatures to form solid masonry blocks.
(E) Answer not known

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100. Arrange the following soil types based on their total area coverage in Tamil Nadu from highest to lowest.
I. Red Soil
II. Black Soil
III. Alluvial Soil
IV. Laterite Soil
(A) I, II, III, IV
(B) I, III, II, IV
(C) III, I, II, IV
(D) II, I, III, IV
(E) Answer not known

101. Which of the following best defines a 'mineral' in geological and geographical terms?
(A) Naturally occurring inorganic substance with a definite chemical structure
(B) Any substance extracted from the earth that has significant economic value
(C) Any naturally occurring organic fuel formed from fossilized plant remains
(D) A synthetic material manufactured from refined chemical elements of the crust
(E) Answer not known

102. The following question consists of two statements — Assertion (A) and Reason (R). Answer the question by selecting the appropriate option.
Assertion (A): The Peninsular shield of India is highly rich in metallic minerals.
Reason (R): The region is predominantly composed of ancient igneous and metamorphic rocks which are the primary hosts for metallic ores.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

103. Minerals are divided into metallic and non-metallic. Which of the following groups consists exclusively of non-metallic minerals?
(A) Iron, Copper, Bauxite
(B) Mica, Limestone, Graphite
(C) Manganese, Mica, Gold
(D) Lead, Zinc, Gypsum
(E) Answer not known

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104. Match the significant mining centers in List I with the corresponding minerals extracted there in List II.
List I: (Mining Center)
P. Kolar
Q. Jharia
R. Panna
S. Neyveli
List II: (Mineral)
I. Coal
II. Gold
III. Lignite
IV. Diamond
(A) P-II, Q-I, R-IV, S-III
(B) P-I, Q-II, R-III, S-IV
(C) P-IV, Q-III, R-II, S-I
(D) P-II, Q-IV, R-I, S-III
(E) Answer not known

105. India exports a substantial amount of iron ore to countries like Japan and South Korea. Which major sea port handles a significant portion of iron ore exports from the Goa and Karnataka regions?
(A) Haldia
(B) Paradip
(C) Kandla
(D) Marmagao
(E) Answer not known

106. Consider the following statements about Petroleum and Natural Gas in India:
I. Petroleum is primarily found in the sedimentary basins of India.
II. The ONGC is the primary agency responsible for exploring and producing petroleum in India.
III. India is completely self-sufficient in petroleum production and does not rely on imports.
Which of the above statement(s) is/are correct?
(A) I and II only
(B) II and III only
(C) I and III only
(D) I only
(E) Answer not known

107. The Digboi oil field is historically significant for India's energy sector. Where is it located and what is its significance?
(A) Gujarat; it is the largest offshore field.

(B) Assam; it is the oldest functioning oil well in India.
(C) Maharashtra; it hosts the largest petroleum refinery.
(D) Rajasthan; it is the newest oil discovery.
(E) Answer not known

108. Which of the following pairs linking a major Bauxite mine/region to its state is incorrectly matched?
(A) Panchpatmali - Odisha
(B) Khetri - Karnataka
(C) Amarkantak plateau - Madhya Pradesh
(D) Bilaspur - Chhattisgarh
(E) Answer not known

109. Manganese is an essential raw material in steel manufacturing. Approximately how many kilograms of manganese are required to manufacture one tonne of steel?
(A) 2 kg
(B) 10 kg
(C) 50 kg
(D) 100 kg
(E) Answer not known

110. Arrange the following petroleum refining fractions in increasing order of their boiling points (from lightest to heaviest).
I. Petrol
II. Kerosene
III. Diesel
IV. Fuel Oil
(A) I, II, III, IV
(B) IV, III, II, I
(C) II, I, IV, III
(D) I, III, II, IV
(E) Answer not known

111. Despite the advent of synthetic alternatives, natural mica maintains its dominance in which specific global industry due to its unparalleled properties?
(A) Heavy machinery manufacturing
(B) Cement manufacturing
(C) Automotive industry
(D) Electrical and electronic industry
(E) Answer not known

112. The following question consists of two statements — Assertion (A) and Reason (R). Answer the question by selecting the appropriate option.
Assertion (A): Limestone is only used in the manufacturing of cement and has no other industrial applications.
Reason (R): Limestone contains calcium carbonate, which is the primary raw material required for cement clinker production.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

113. Consider the following statements regarding the industrial significance of Bauxite:
I. It is the sole commercial ore for Aluminium extraction.
II. Aluminium derived from it is used in the aircraft industry due to its light weight and strength.
III. Bauxite mining has minimal environmental footprint as it is done mostly underground.
IV. India is one of the leading producers of bauxite in the world.
Which of the above statement(s) is/are correct?
(A) I, II and IV
(B) I, III and IV
(C) II, III and IV
(D) I, II and III
(E) Answer not known

114. Opencast mining is the most common method of extracting near-surface minerals in India. Which of the following is the most severe immediate environmental impact of this method?
(A) Significant increase in regional seismic activity
(B) Massive depletion of the stratospheric ozone layer
(C) Gradual increase in the local groundwater tables
(D) Complete removal of topsoil and vegetation cover
(E) Answer not known

115. Match the following minerals found in Tamil Nadu in List I with their predominant districts in List II.

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List I: (Mineral)
P. Lignite
Q. Magnesite
R. Titanium (Ilmenite)
S. Limestone
List II: (District)
I. Salem
II. Kanyakumari
III. Cuddalore
IV. Ariyalur
(A) P-III, Q-I, R-II, S-IV
(B) P-I, Q-III, R-IV, S-II
(C) P-III, Q-II, R-I, S-IV
(D) P-IV, Q-I, R-III, S-II
(E) Answer not known

116. Under which sub-category do natural gas and petroleum fall?
(A) Ferrous metallic minerals
(B) Non-ferrous metallic minerals
(C) Energy minerals / Mineral fuels
(D) Rare earth minerals
(E) Answer not known

117. Consider the following statements regarding the impact of mining on tribal communities in India:
I. Major mining projects often require forest clearance, leading to habitat loss.
II. Tribal communities frequently face displacement without adequate rehabilitation.
III. The MMDR Act amendments aim to ensure that local communities benefit from mining through the District Mineral Foundation (DMF).
IV. Mining completely eradicates poverty in tribal areas within a year of inception.
V. The Fifth Schedule of the Constitution provides safeguards for tribal lands.
Which of the above statement(s) is/are correct?
(A) I, II, III and V
(B) I, II, IV and V
(C) II, III, IV and V
(D) I, III, IV and V
(E) Answer not known

118. Which of the following pairs of a mineral and its primary association with atomic energy generation is correctly matched?
(A) Bauxite - Used as control rods in nuclear reactors
(B) Lignite - Primary fuel for fast breeder reactors
(C) Magnetite - Used as a nuclear coolant
(D) Thorium - Extracted from Monazite sands
(E) Answer not known

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119. Zircon and Rutile are significant beach sand minerals found along the Tamil Nadu coast. What is a major industrial use of Zircon?
(A) Manufacturing of conventional nitrogenous fertilizers
(B) Production of high-temperature ceramics and refractories
(C) Large scale commercial extraction of aluminium
(D) Manufacturing of flexible and durable industrial plastics
(E) Answer not known

120. Arrange the following states in decreasing order of their typical iron ore production and reserve base in India.
I. Odisha
II. Chhattisgarh
III. Karnataka
IV. Punjab
(A) I, II, III, IV
(B) II, I, III, IV
(C) III, I, II, IV
(D) I, III, II, IV
(E) Answer not known

121. Soil erosion is a natural process often accelerated by human activities. What is the fundamental definition of soil erosion?
(A) The chemical breakdown of parent rock into small particles
(B) The accumulation of salts in the topsoil due to evaporation
(C) The process of nitrogen fixation by various leguminous plants
(D) The removal and transportation of the top layer of soil by agents like water and wind
(E) Answer not known

122. The following question consists of two statements — Assertion (A) and Reason (R). Answer the question by selecting the appropriate option.
Assertion (A): Red soil is the most widely

distributed soil type in Tamil Nadu.
Reason (R): The geology of Tamil Nadu is predominantly made up of ancient crystalline and metamorphic rocks which weather to form red soil.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

123. The Soil Health Card (SHC) Scheme is critical for sustainable agriculture. Which specific parameters does the SHC provide information on?
(A) Only macro-nutrients like Nitrogen, Phosphorus, and Potassium
(B) Macro-nutrients, secondary nutrients, micro-nutrients, and physical parameters like pH
(C) The genetic quality of hybrid seeds required for the soil
(D) The exact amount of rainfall the soil will receive annually
(E) Answer not known

124. Match the following organizations/agencies in List I with their primary domain of operations in List II.
List I: (Agency)
P. ONGC
Q. NLC
R. IREL
S. ICAR
List II: (Domain)
I. Soil classification and agricultural research
II. Processing of rare earths and beach sand minerals
III. Exploration of petroleum and natural gas
IV. Lignite mining and power generation
(A) P-III, Q-IV, R-II, S-I
(B) P-IV, Q-III, R-I, S-II
(C) P-III, Q-I, R-IV, S-II
(D) P-I, Q-IV, R-II, S-III
(E) Answer not known

125. Garnet is one of the important beach sand minerals found in Tamil Nadu. What is the primary industrial application of garnet?
(A) In the abrasive industry for sandblasting and waterjet cutting
(B) As a solid fuel for industrial thermal power plants
(C) As a chemical fertilizer for highly alkaline soils
(D) For the extraction of strategic radioactive isotopes
(E) Answer not known

126. Consider the following statements regarding Granite quarrying in Tamil Nadu:
I. Tamil Nadu has some of the finest deposits of black and multi-colored granites.
II. Granite quarrying significantly contributes to the state's export revenue.
III. Granite is primarily found in the coastal sandy plains of the state.
Which of the above statement(s) is/are correct?
(A) I and II only
(B) II and III only
(C) I and III only
(D) I only
(E) Answer not known

127. Graphite mining in Tamil Nadu is specifically localized in certain districts due to geological formations. Which district is home to the Tamil Nadu Minerals Limited (TAMIN) graphite recovery plant?
(A) Kanyakumari
(B) Dharmapuri
(C) Thanjavur
(D) Sivaganga
(E) Answer not known

128. Which of the following pairs of a Tamil Nadu district and its characteristically notable soil type is correctly matched?
(A) Nilgiris - Saline Soil
(B) Nagapattinam - Laterite Soil
(C) Thanjavur - Alluvial Soil
(D) Coimbatore - Peaty Soil
(E) Answer not known

129. Tamil Nadu holds a virtual monopoly in lignite reserves in India. Approximately what percentage of India's total lignite reserves is found in Tamil Nadu?
(A) 25%
(B) 50%

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(C) Over 80%
(D) Less than 10%
(E) Answer not known

130. Arrange the following soil horizons in correct sequence starting from the unweathered bedrock moving upwards to the surface.
I. R
II. C
III. B
IV. A
V. O
(A) I, II, III, IV, V
(B) V, IV, III, II, I
(C) II, I, III, IV, V
(D) IV, III, II, V, I
(E) Answer not known

131. The ICAR established the All India Soil Survey Organization in which year to comprehensively classify Indian soils?
(A) 1947
(B) 1956
(C) 1972
(D) 1991
(E) Answer not known

132. The following question consists of two statements — Assertion (A) and Reason (R). Answer the question by selecting the appropriate option.
Assertion (A): The processing of Monazite sand is openly permitted for all private entities in India without restriction.
Reason (R): Monazite contains thorium, which is a prescribed substance under the Atomic Energy Act, 1962, due to its strategic and radioactive nature.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

133. Consider the following statements about the National Mineral Policy (NMP) 2019:
I. It aims to increase the production of major minerals by 200% in 7 years.
II. It introduced the concept of 'Exclusive Mining Zones'.
III. It emphasizes the welfare of mining-affected communities.
IV. It strictly prohibits the use of coastal waterways for mineral transport.
Which of the above statement(s) is/are correct?
(A) I, II and III
(B) I, III and IV
(C) II, III and IV
(D) I, II and IV
(E) Answer not known

134. Climate is a pivotal active factor in soil formation. Which two climatic elements are the most critical in determining the rate and type of soil weathering?
(A) Wind speed and atmospheric pressure
(B) Cloud cover and humidity
(C) Solar flares and ocean currents
(D) Temperature and precipitation
(E) Answer not known

135. Match the following soil science terms in List I with their meanings in List II.
List I: (Term)
P. Leaching
Q. Humus
R. Soil profile
S. Weathering
List II: (Meaning)
I. Breakdown of rocks into smaller particles
II. Vertical section of the soil showing various horizons
III. Downward washing of nutrients from topsoil
IV. Dark, organic material formed by decay of plant and animal matter
(A) P-III, Q-IV, R-II, S-I
(B) P-I, Q-II, R-III, S-IV
(C) P-III, Q-I, R-IV, S-II
(D) P-II, Q-III, R-I, S-IV
(E) Answer not known

136. Desert soils in India, despite being sandy and poor in organic matter, can be brought under cultivation for crops like wheat and cotton. What is the primary requirement to make this possible?
(A) Addition of large amounts of coarse river sand
(B) Complete removal of the existing topsoil

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layers
(C) Provision of assured and proper irrigation facilities
(D) Application of highly acidic and synthetic fertilizers
(E) Answer not known

137. Consider the following salient features regarding Indian mineral resources:
I. India is completely self-sufficient in copper and gold reserves.
II. The Peninsular plateau contains most of the coal, metallic minerals, and mica.
III. The sedimentary basins of Gujarat and Assam contain significant petroleum deposits.
IV. Rajasthan has large reserves of non-ferrous minerals.
V. The Himalayan region is devoid of any economic mineral deposits due to its young age.
Which of the above statement(s) is/are correct?
(A) II, III and IV
(B) I, II, III and IV
(C) II, III, IV and V
(D) I, III and V
(E) Answer not known

138. Which of the following pairs linking a river to the primary soil type it deposits in its deltaic region in Tamil Nadu is correctly matched?
(A) Cauvery - Alluvial Soil
(B) Palar - Laterite Soil
(C) Vaigai - Peaty Soil
(D) Thamirabarani - Black Soil
(E) Answer not known

139. The location of aluminium smelting industries is primarily dependent on the proximity to bauxite mines and which other critical input, due to the energy-intensive nature of the process?
(A) Availability of cheap and unskilled manual labor
(B) Regular and cheap supply of electricity
(C) Abundant and perennial freshwater supply for cooling
(D) Proximity to major seaports for easy bulk exporting
(E) Answer not known

140. Arrange the following stages of water-induced soil erosion in their correct developmental sequence from initial impact to advanced degradation.
I. Splash impact from raindrops
II. Sheet wash removing a uniform layer
III. Formation of rills
IV. Deepening into gullies
(A) I, II, III, IV
(B) II, I, III, IV
(C) I, III, II, IV
(D) III, II, I, IV
(E) Answer not known

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ANSWERS

1. (A) Bedrock
Soil development occurs in distinct layers or horizons. The base of a typical soil profile consists of solid, unweathered rock. This foundational layer provides the parent material through slow physical and chemical weathering processes over geological time. It remains unaffected by biological activity and organic decomposition, serving as the stable platform upon which all upper soil horizons eventually form.

2. (C) A is true but R is false.
Soil horizons represent distinct layers with unique characteristics. The second layer, often called the subsoil, accumulates minerals like iron and aluminum oxides that have leached from the upper layers. However, biological activity is concentrated in the topsoil and organic horizons above it. Consequently, the claim regarding mineral accumulation is accurate, while the statement about biological activity is incorrect.

3. (A) Parent material
Soil formation is influenced by climate, relief, time, and organisms acting upon the underlying geological substrate. This foundational rock determines the initial chemical composition, mineralogy, and physical texture of the resulting soil. While other factors modify the soil over time, the primary source of minerals and the inherent color of the soil are inherited from this original parent rock material.

4. (A) P-IV, Q-III, R-I, S-II
Soil layers are categorized into specific horizons based on their unique properties. The surface layer consists of organic debris, followed by the topsoil which is densely packed with organic matter. Below this, the subsoil accumulates various minerals through leaching. Finally, the deepest layer contains partially weathered rock material that sits just above the solid bedrock found at the very base.

5. (C) Eight
The Indian Council of Agricultural Research is the primary body for agricultural study and classification. Based on extensive surveys regarding genesis, color, and composition, the organization officially recognizes eight major soil groups in India. These include alluvial, black, red, laterite, forest, arid, saline, and peaty soils. This systematic categorization helps in planning specific agricultural strategies across diverse geographical regions.

6. (B) I and III only
Alluvial soils are highly productive and cover large areas in the northern plains and river deltas. These soils are formed by the deposition of silt by major rivers over long periods. They are typically rich in potash but generally lack adequate phosphorus and nitrogen. Their high fertility supports intensive cultivation of essential crops like wheat, rice, sugarcane, and oilseeds.

7. (D) Bangar
Alluvial deposits are divided into older and newer categories based on their age and position. The older variety is found in higher regions above the floodplains and often contains calcareous deposits known as kankar. This soil is less fertile than the newer variety found closer to the river. It represents the ancient silt deposited before the river shifted its course.

8. (A) Black Soil - Excellent water retention capacity for cotton cultivation
Different soil types possess unique physical and chemical properties that determine their agricultural suitability. Clay-rich soils, formed from volcanic basalt, are famous for their ability to retain moisture for long periods. This characteristic is particularly beneficial for growing crops like cotton, which require consistent moisture. Other soils, like laterites, are typically nutrient-poor due to intense leaching under heavy rainfall.

9. (B) Iron
The distinctive hue of certain soils is derived from the chemical elements present in their parent rocks. In red and yellow soils, the presence of iron in a highly oxidized state gives

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the soil its characteristic reddish color. When these soils occur in a hydrated form, they often appear yellow. This coloration is most common in crystalline and metamorphic rock regions.

10. (A) O, A, E, B, C, R
A mature soil profile consists of several horizontal layers called horizons arranged from the surface to the bedrock. The sequence begins with the organic layer at the top, followed by the topsoil and the eluviated zone. Below these lie the subsoil, the weathered parent material, and finally the solid, unweathered rock. This vertical arrangement reflects the different stages of soil development.

11. (A) Silica and Soluble salts
Laterite soils develop in tropical regions characterized by alternating wet and dry seasons. Heavy rainfall causes intense leaching, where water percolates through the soil and removes soluble minerals. This process specifically washes away silica and various salts, leaving behind a soil rich in iron and aluminum oxides. Consequently, these soils are often acidic and require heavy manuring for agriculture.

12. (A) Both A and R are true and R is the correct explanation of A.
Soils in desert regions are characterized by a lack of organic matter and humus. This is primarily because high temperatures and dry conditions lead to rapid evaporation and very sparse plant growth. Without significant vegetation to provide leaves and roots for decomposition, the soil cannot accumulate organic content. Therefore, the climatic conditions directly limit the biological factors necessary for humus formation.

13. (A) I, II and III
Soils found in mountainous regions are highly variable and depend on altitude and rainfall. They typically develop in areas with dense forest cover and receive sufficient precipitation. While these soils are often rich in organic matter due to leaf litter, they frequently lack essential nutrients like potash and phosphorus. Their texture and chemical properties change significantly as one moves up slopes.

14. (C) Over-irrigation leading to capillary action
Soil salinity and alkalinity often result from human activities in agricultural landscapes. In regions with poor drainage, excessive irrigation causes the water table to rise. As water evaporates from the surface, it pulls dissolved salts upward from the deeper layers through capillary action. These salts accumulate in the topsoil, eventually reaching toxic levels that inhibit plant growth and render land uncultivable.

15. (A) P-III, Q-I, R-IV, S-II
Specific agricultural crops are adapted to the unique nutrient and physical profiles of different soil types. Volcanic soils are ideal for cotton, while leached tropical soils support cashew and tapioca. River-deposited silts are the most versatile for food grains like wheat and paddy. In contrast, heavy, acidic peaty soils are often home to salt-tolerant vegetation and mangrove ecosystems in coastal zones.

16. (D) North Bihar, south Uttarakhand, and coastal regions of Bengal, Odisha, and Tamil Nadu
Peaty soils form in humid regions with heavy rainfall and poor drainage, allowing for the accumulation of large amounts of organic matter. In India, these soils are significantly found in the northern parts of Bihar and southern Uttarakhand. They are also prevalent along the eastern coastline in states like West Bengal, Odisha, and Tamil Nadu, where marshy conditions often prevail.

17. (B) I, III, IV and V
Soil degradation refers to the decline in fertility and physical quality, often driven by erosion. While sheet erosion removes thin layers of soil over large areas, gully erosion creates deep channels that destroy land. Human activities like deforestation and overgrazing accelerate these processes. Additionally, wind erosion is a major factor in dry climates, where loose soil is easily transported by air.

18. (C) Alluvial Soil - Central parts of Madhya Pradesh
Soil types are distributed based on regional geology and river systems. Alluvial soils are primarily concentrated in the Indo-Gangetic plains and coastal deltas rather than the central plateau. In contrast, black soil is dominant in

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Maharashtra, while laterite is common in the Western Ghats. Arid soils are restricted to the western desert regions. Therefore, the association of alluvium with central Madhya Pradesh is inaccurate.

19. (A) Chambal basin
Intense gully erosion can transform fertile landscapes into a network of deep ravines and ridges, known as badland topography. This phenomenon is most famous in the basin of the Chambal River. The soft soil and lack of vegetation in this region make it highly susceptible to the cutting action of running water, creating terrain that is completely unfit for traditional agricultural practices.

20. (A) II, I, IV, III
The creation of soil is a long-term process starting with the physical and chemical breakdown of solid rock. Once the parent material is weathered, pioneer species like lichens and mosses add organic matter. Over time, finer minerals accumulate and the subsoil begins to develop. Finally, the soil matures into a structured profile with distinct horizontal layers characterized by different mineral and organic contents.

21. (B) Terracing
On steep hilly terrain, running water can rapidly wash away fertile topsoil. To combat this, farmers carve broad, flat steps into the slopes. This practice reduces the velocity of surface runoff and allows water to soak into the ground. By creating these level surfaces, soil loss is minimized, and the land becomes suitable for cultivation without the constant threat of severe erosion.

22. (C) A is true but R is false.
Planting rows of trees and shrubs is a common strategy in arid and coastal areas to protect the land. These barriers serve as windbreaks, significantly reducing the speed of wind and preventing the loss of loose topsoil. While they are highly effective for physical conservation, their primary purpose is not the chemical fixation of nitrogen, which is instead achieved by specific bacterial processes.

23. (D) To assess soil nutrient status and advise farmers on optimal fertilizer dosage
The Indian government launched a specialized initiative to help farmers improve agricultural productivity. By analyzing soil samples for various macro and micro-nutrients, the program provides a detailed report on the soil's current health. This allows farmers to apply the precise amount of fertilizers and soil amendments needed, reducing costs and preventing environmental damage from the excessive use of chemical inputs.

24. (A) P-III, Q-II, R-IV, S-I
Various techniques are employed to protect the soil from erosion and maintain its fertility. Methods include following the natural contours of hills to slow water flow and planting tree lines to block wind. Additionally, large-scale forestation binds the soil together, while rotating different crops prevents the exhaustion of specific nutrients. Together, these practices ensure the long-term sustainability and health of agricultural land.

25. (B) Red Soil
The geological makeup of Tamil Nadu is dominated by ancient crystalline and metamorphic rocks. As these rocks weather under tropical conditions, they form a soil that is rich in iron oxides. This specific soil type covers nearly two-thirds of the state's total area. It is found extensively across the central and southern districts, forming the most widespread foundation for agriculture.

26. (B) II and III only
Red soils are characterized by a porous texture and a high diffusion of iron, which gives them their color. However, they are generally poor in nitrogen, phosphorus, and organic matter. Because of their light texture, they do not retain water well. Despite these limitations, they are suitable for growing hardy crops like groundnut and various millets, especially where irrigation is limited.

27. (A) With organic manure and proper irrigation facilities
While red soil is naturally deficient in several key nutrients, its productivity can be significantly enhanced. By applying organic fertilizers and ensuring a steady supply of water through irrigation, farmers can overcome the soil's

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natural limitations. These interventions allow for the successful cultivation of a variety of crops, making the soil a vital resource for the state's diverse and productive agricultural economy.

28. (C) Black Cotton Soil - Coimbatore and Madurai
The distribution of soils in Tamil Nadu follows the underlying geology. Alluvial soils are found in river deltas, while laterites are restricted to specific hilly or coastal zones. Black soil, known for its high clay content, is concentrated in the western districts such as Coimbatore and parts of the southern region like Madurai. This soil is particularly prized for cotton cultivation.

29. (D) Paddy
The Cauvery River deposits vast amounts of fertile silt as it flows toward the sea, creating an extensive deltaic region. This alluvial soil is extremely rich and possesses excellent water-holding properties. Due to these favorable conditions and the availability of river water, the area has become the rice bowl of the state. Paddy is the most extensively cultivated crop in this tract.

30. (B) Red Soil, Black Soil, Alluvial Soil, Laterite Soil
Tamil Nadu features a diverse range of soil types, each covering different proportions of the state. The most extensive is red soil, which covers the majority of the land. It is followed by black soil, primarily found in the western and southern districts. Alluvial soil is concentrated in the river deltas and coastal plains, while laterite soil occupies the smallest area.

31. (B) Excellent moisture retention and self-ploughing nature
Black soil is distinguished by its high clay content, which allows it to expand when wet and contract when dry. This contraction creates deep cracks, a phenomenon often described as self-ploughing because it helps in soil aeration. Its superior ability to retain moisture for long periods makes it exceptionally well-suited for cotton cultivation, even in regions with moderate rainfall or limited irrigation.

32. (C) A is true but R is false.
Laterite soil formation requires heavy rainfall and high temperatures that lead to intense leaching. In Tamil Nadu, these specific conditions are primarily met in certain hilly regions and high elevations. However, the flat coastal plains of the state are dominated by different processes and soil types, such as alluvium or saline sands, rather than the intense chemical leaching required to create laterite.

33. (A) I, II and IV
Along the Coromandel coast, soil quality is often impacted by the proximity to the sea. Frequent inundation by high tides brings in salt, making the soil saline and generally unsuitable for traditional agriculture without extensive reclamation. However, these areas support specific salt-tolerant vegetation like casuarina trees. These coastal soils require specialized management due to their high salt content and environment.

34. (C) Gypsum
To make salt-affected soils productive again, chemical amendments are used to change the soil's chemistry. Adding gypsum is a common and effective practice. The calcium in gypsum replaces the sodium ions attached to the soil particles. This process improves the soil structure and allows the harmful sodium to be washed away with water, eventually lowering the soil's alkalinity and improving its health.

35. (A) P-II, Q-IV, R-I, S-III
The geography of Tamil Nadu dictates the soil found in each district. The deltaic region of Thanjavur is famous for its fertile river-deposited silt. Coastal districts like Ramanathapuram often deal with salinity due to seawater. In the west, Coimbatore features extensive clay-rich black soils. Finally, hilly regions such as the Nilgiris are characterized by laterite soils formed under high rainfall and leaching.

36. (D) Metallic and Non-metallic
Minerals are fundamental building blocks of the earth's crust, characterized by specific chemical compositions. Geographers and geologists broadly categorize these substances based on their primary properties and the presence or absence of metals. One group includes minerals from which metals are extracted, while the other group consists of diverse substances like mica and limestone that do not contain metal.

37. (A) I, II, IV and V
The ancient geological formations of southern and central India serve as a massive reservoir for the nation's mineral wealth. This region is primarily composed of very old igneous and metamorphic rocks that contain vast deposits of iron ore, manganese, and coal. Major rivers flow through these mineral-rich plateaus, facilitating mining activities. Consequently, this shield accounts for the majority of metallic production.

38. (C) Limestone - Metallic mineral
Minerals are classified according to whether they yield metals upon processing. Iron ore and bauxite are classic examples of metallic minerals because they are the sources of iron and aluminum. Mica and limestone, however, are non-metallic. Limestone is a sedimentary rock primarily composed of calcium carbonate and is used in construction and cement, making its classification as a metallic mineral incorrect.

39. (D) Magnetite
Iron occurs in several ore forms, each with varying levels of purity. The most superior variety contains up to seventy percent iron and is renowned for its natural magnetic properties. This ore is highly valued in the electrical industry. While other forms like hematite are also significant for industrial use, they typically contain slightly lower iron concentrations and lack the same magnetic strength.

40. (A) III, IV, I, II
Coal quality is determined by the concentration of carbon, which increases as organic matter undergoes higher pressure and temperature over time. The lowest grade is a soft, fibrous material with low carbon. This is followed by brown coal, which is also relatively low in energy. More mature forms include common industrial coal, while the highest grade is a hard, high-carbon variety.

41. (B) Odisha
India possesses some of the world's finest iron ore deposits, which are crucial for its steel industry. One particular state in the east stands out as the leading producer, holding significant reserves of high-grade ore. This region features prominent mining centers such as Badampahar. The large-scale extraction from these mines feeds numerous domestic steel plants and also contributes to the country's export.

42. (A) Both A and R are true and R is the correct explanation of A.
The Damodar Valley is a critical industrial hub due to its immense geological wealth. It contains the most extensive and important reserves of ancient coal in the country. Because this region mirrors the industrial and mineral significance of the famous German coal-producing heartland, it is widely known by a similar title. The abundance of coal here has historically driven heavy industrial growth.

43. (A) Mumbai High Field
Exploration for oil and gas in India takes place both on land and under the seabed. The most productive site is located in the Arabian Sea, off the coast of Maharashtra. Since its discovery in the 1970s, this offshore field has remained the largest source of crude oil in the country. It is managed by the national petroleum corporation and is energy vital.

44. (A) P-II, Q-III, R-I, S-IV
Major iron ore deposits are distributed across several key states in India. High-grade ores are found in the central hills of Chhattisgarh and the northern districts of Jharkhand. Additionally, the western regions of Karnataka are home to significant mines known for their export-quality ore. These mining centers are strategically important as they supply raw materials to both domestic steel industries and global markets.

45. (D) Aluminium
Bauxite is a clay-like substance that forms through the weathering of various rocks in tropical climates. It is the primary commercial source for one of the most versatile metals used today. Through a complex refining and smelting process, a lightweight, corrosion-resistant metal is produced. This metal is essential for the aerospace, construction, and packaging industries due to its unique physical and chemical properties.

46. (A) I and II only
Manganese is a vital mineral used predominantly as a hardening agent in the production of steel and various alloys. Beyond metallurgy, it is

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also a key ingredient in chemical products like bleaching powder, insecticides, and paints. While India possesses significant reserves and is a major global producer, it does not hold a monopoly, as several other nations also have substantial deposits of this mineral.

47. (B) Rajasthan
Copper is a highly conductible metal essential for the electrical and electronics industries. In India, its production is concentrated in a few specific locations. One of the most famous and ancient copper-producing areas is located in the northern state of Rajasthan. These mines have been worked for centuries and continue to be a primary source of copper ore for the nation's industrial requirements.

48. (D) Copper - Madhya Pradesh
The distribution of minerals in India is highly uneven and linked to regional geology. While states like Odisha lead in bauxite production, copper extraction is notably concentrated in Madhya Pradesh, particularly in the Balaghat mines. These mines produce a significant portion of the country's total copper output. Other states like Punjab and Haryana are not known for major deposits of these specific metallic minerals.

49. (A) Jharkhand and Andhra Pradesh
Mica is a unique mineral that can be easily split into very thin sheets. Its exceptional insulating properties and resistance to high voltage make it indispensable for electrical and electronic components. Historically, the vast majority of India's mica has been produced in the northern parts of the Chota Nagpur plateau in Jharkhand and the Nellore district of the state of Andhra Pradesh.

50. (A) I, II
India's coal deposits are categorized into two main geological ages. The much older and more significant deposits, which account for nearly all of the country's metallurgical coal, date back over two hundred million years. A second, much younger category of coal was formed during a later period, roughly fifty million years ago. This younger coal is primarily found in the northeastern states.

51. (A) Cement Industry
Limestone is a sedimentary rock composed largely of calcium carbonate. It is an essential mineral for numerous industrial processes. Most importantly, it serves as the fundamental raw material for the manufacturing of cement. When crushed and heated with other ingredients, it forms the clinker that is ground into the cement used worldwide for construction, infrastructure, and various urban development projects across India.

52. (C) A is true but R is false.
Mica is highly valued in modern technology because of its ability to withstand high temperatures and act as a superior electrical insulator. While it is essential for electronics, it is not a metallic mineral, nor is it malleable or conductive. Instead, mica is a non-metallic mineral that is prized specifically because it does not conduct electricity, making it an ideal protective barrier.

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53. (B) I, III and IV
Coal is a cornerstone of India's energy sector, providing a huge share of its commercial power. The country's reserves are divided into the ancient Gondwana formations and the younger Tertiary deposits. High-quality coal is essential for smelting iron in blast furnaces. However, lignite is a lower-grade brown coal and is not the primary high-quality coal found in the Damodar Valley.

54. (C) Petroleum deposits in offshore and onshore sedimentary basins
Natural gas is a clean-burning fossil fuel that often occurs alongside petroleum. In India, major reserves have been discovered in the sedimentary basins both on land and in offshore areas. Significant deposits are found in the Mumbai High field, the Krishna-Godavari basin, and parts of the Gulf of Khambhat. These resources are critical for power generation, fertilizer production, and domestic fuel.

55. (A) P-II, Q-IV, R-I, S-III
Metals are extracted from naturally occurring ores through various metallurgical processes. While aluminum is derived from a clay-like bauxite ore, iron is most commonly obtained from hematite. Lead is primarily extracted from a sulfide mineral

known as galena, and copper is sourced from copper-iron sulfide ores. Understanding these relationships is fundamental to the mining and processing industries that support global technology.

56. (A) Bauxite
Odisha is a powerhouse in India's mineral sector, particularly for non-ferrous resources. It is the leading producer of the ore used to extract aluminum, housing nearly half of the country's total reserves. Major deposits are found in the Panchpatmali hills. This abundance has led to the establishment of massive refining and smelting plants within the state, significantly contributing to the economy.

57. (A) I, II, IV and V
India faces a significant shortage of domestic copper and must import large quantities to meet demand. The majority of local production comes from specific mines in Madhya Pradesh and Jharkhand. Copper is found in igneous and metamorphic rocks, not alluvial deposits. It is a critical material for the electrical industry due to its high conductivity, making it indispensable for manufacturing various cables.

58. (B) Neyveli - Andhra Pradesh
Coal mines are located within specific geological basins across India. While the famous Jharia and Raniganj mines are located in Jharkhand and West Bengal respectively, the Neyveli lignite mines are situated in the southern state of Tamil Nadu. Associating Neyveli with Andhra Pradesh is incorrect. These mines are vital for regional energy needs, particularly for powering thermal electricity stations in the peninsula.

59. (A) Copper
The Malanjkhand area in Madhya Pradesh is home to a massive mineral deposit that is extracted using large-scale surface mining techniques. It represents the largest open-pit operation in India for this specific non-ferrous metal. The ore from this mine is essential for the country's electrical and industrial sectors. This project plays a pivotal role in reducing India's heavy reliance on imported metal.

60. (A) III, II, IV, I
Iron ores are ranked based on their maximum possible iron concentration. The most iron-rich variety is a magnetic ore with high purity. It is followed by the most commonly mined industrial ore, which has a slightly lower concentration. Further down the scale are ores with significant moisture content and lower iron percentages. The least concentrated form is a carbonate ore with low iron.

61. (D) Lignite
Lignite is a soft, brown coal with a high moisture content and relatively low carbon levels. Tamil Nadu is the leading state in India for the reserves and production of this specific fuel. Large-scale mining is conducted in the Neyveli region, where the extracted coal is primarily used as fuel for massive thermal power plants that supply electricity to the entire southern region.

62. (C) A is true but R is false.
The southern coastline of Tamil Nadu is famous for its dark-colored sands which contain valuable heavy minerals like ilmenite and rutile. These minerals are concentrated by the natural action of waves and tides along the shore. However, they are not derived from the erosion of coastal alluvial soils; instead, they originate from the weathering of ancient rocks in the hinterland.

63. (B) Thorium
Certain coastal sands in India contain a mineral called monazite, which is of great strategic importance. This mineral is the primary source of a specific radioactive element that can be used in nuclear reactors. Because India has some of the world's largest reserves of these sands, especially in Kerala and Tamil Nadu, they are carefully regulated and processed for the national energy program.

64. (A) P-IV, Q-I, R-II, S-III
Tamil Nadu's diverse mineral wealth is distributed across specific geological zones. Brown coal is mined extensively in the Cuddalore district, while magnesium-rich minerals are found near Salem. Graphite deposits are concentrated in the Sivaganga region. Along the southern tip of the state, the beaches are rich in heavy minerals. These locations are critical for both state-level industrial production and the national supply.

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65. (A) Krishnagiri
Tamil Nadu is a major producer of high-quality granite used in construction and decoration worldwide. While several districts have deposits, one northern district is particularly famous for its vast reserves and extensive network of quarrying and polishing units. The stones from this region, available in various colors and patterns, are highly sought after in international markets, making it a major dimensional stone hub.

66. (B) I and III only
Graphite is a soft, crystalline form of carbon that is prized for its heat resistance and electrical conductivity. In Tamil Nadu, significant deposits are mined in the Sivaganga district. It is an essential material for making lubricants, pencils, and components for dry cell batteries. Unlike other forms of carbon, it is not highly reactive or combustible at normal temperatures, making it industrially safe.

67. (A) To encourage zero waste mining and sustainable development
The updated mineral policy for the country focuses on balancing economic growth with environmental responsibility. A central goal is to promote mining practices that minimize waste and protect the surrounding ecosystem. This includes encouraging the use of modern technology to extract as much value as possible from every ton of ore and ensuring that the land is rehabilitated after operations conclude.

68. (D) Ilmenite - Titanium
Heavy minerals found in coastal sands are the primary sources for many industrial elements. One specific mineral is the most important source of titanium dioxide, which is used extensively as a pigment in paints, plastics, and paper. Other minerals like zircon provide zirconium, while monazite is the source of thorium. These minerals are vital for advanced manufacturing and various high-technology industrial applications globally.

69. (B) Transparent competitive auction process
Recent legal changes in India's mining sector aimed to eliminate discretion and corruption in the allocation of mineral resources. The updated framework replaced older, non-competitive methods with a system of open auctions. This ensures that the government receives a fair market value for its minerals while providing a level playing field for all industrial participants through a clear and transparent bidding process.

70. (A) I, II, III, IV
The geological history of India is recorded in several distinct rock systems. The oldest are the ancient crystalline formations of the early crust. These were followed by the first sedimentary and volcanic rocks that are now highly metamorphosed and mineral-rich. Subsequent periods saw the development of large sedimentary basins in central and southern India. This chronological progression explains the complex distribution of minerals.

71. (D) Deforestation and habitat destruction
Surface mining requires the complete removal of the overlying earth and vegetation to reach the buried mineral deposits. This process inevitably leads to the large-scale clearing of forests and the permanent destruction of natural habitats for local wildlife. Furthermore, it results in the loss of topsoil and alters the local landscape, creating significant environmental challenges that require long-term restoration and management efforts.

72. (A) Both A and R are true and R is the correct explanation of A.
A specialized government agency operates processing units in southern Tamil Nadu to harness the state's coastal mineral wealth. These facilities are strategically located near the beaches of Kanyakumari and Thoothukudi because these areas contain significant deposits of heavy minerals. The sands there are rich in zircon, garnet, and monazite, which are processed into high-value products for use in strategic energy sectors.

73. (A) I, II and IV
The NLC is a prestigious national public sector company that manages massive open-pit mines in the Cuddalore district. It primarily extracts brown coal to fuel its own thermal power stations. While it is a major power producer and holds a special government status for its performance, the electricity it generates is distributed across several southern states and is not restricted to Tamil Nadu.

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74. (A) Scheduled areas with high tribal populations and forest cover
Many of India's richest mineral deposits are located beneath lands that have been traditionally inhabited by indigenous communities for generations. These areas are often dense forests that fall under special constitutional protections. When large-scale mining projects are initiated, they frequently necessitate the relocation of these communities, leading to significant socio-economic disruption and ongoing debates regarding development, land rights, and tribal populations.

75. (A) P-IV, Q-III, R-II, S-I
Each mineral found in India's coastal and inland deposits serves a specific industrial or strategic role. Some are critical for nuclear energy, while others are essential for high-temperature ceramics. Certain minerals are used as abrasives in cutting and polishing, and some provide the necessary ingredients for high-quality white pigments. Together, these diverse resources form a backbone for both traditional and high-tech industries.

76. (B) Ariyalur
Limestone is found in several parts of Tamil Nadu, but it is particularly abundant in the central region of the state. One specific district has become a major hub for the cement industry because of its extensive and high-quality limestone reserves. The presence of these sedimentary rock deposits has led to the concentration of numerous large-scale manufacturing plants, making it central to the economy.

77. (A) I, II, III and IV
Tamil Nadu is a leader in lignite production but lacks the high-quality metallurgical coal needed for steel making. Its iron ore is mostly low-grade, requiring specialized processing. The state also produces significant amounts of common stones and gravel for construction. However, it does not possess any major diamond mines, which are instead found in other parts of the country like Madhya Pradesh.

78. (B) Manavalakurichi - Beach sand minerals
The extraction of minerals in Tamil Nadu is highly localized. Neyveli is the center for brown coal, not bauxite, and Ariyalur is famous for limestone, not copper. Salem is known for magnesite and iron ore rather than large-scale coal. In contrast, the coastal area of Manavalakurichi is well-known for its rich deposits of heavy beach sands, which are processed for monazite and zircon.

79. (A) The Environment (Protection) Act, 1986
To mitigate the negative impacts of industrial activities, the Indian government established a comprehensive legal framework. This law requires all new and expanding mining projects to undergo a rigorous assessment of their potential environmental effects. Only after receiving formal clearance from the relevant authorities can these projects proceed. This ensures that development is balanced with the protection of biodiversity, water, and air quality.

80. (A) I, III, IV, II
The eastern coastline of Tamil Nadu stretches from the border of Andhra Pradesh down to the southernmost tip of the Indian peninsula. Starting from the northern capital city, one moves southward past the lignite-rich region of Cuddalore. Continuing further south leads to the major port city of Thoothukudi, before finally reaching the district at the very bottom of the country where the seas meet.

81. (D) It determines the thickness of the soil profile and its maturity.
Soil formation is a slow process that requires hundreds or even thousands of years to produce a few centimeters of soil. As more time passes, the weathering of the parent rock continues and more organic matter is added. This duration allows for the development of deep, well-defined layers or horizons. Therefore, older soils are generally thicker and possess a more mature profile than younger deposits.

82. (D) A is false but R is true.
While physical and chemical weathering initiate the breakdown of rock, biological factors are essential for creating true soil. Living organisms such as bacteria, fungi, and earthworms decompose organic matter into humus and help mix the soil layers. Their activity is fundamental to soil fertility and structure. Without these biological processes, the material would simply be weathered rock rather than a life-supporting medium.

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83. (B) Montmorillonite
The exceptional ability of black soils to hold water is due to their unique mineralogical composition. They are dominated by a specific type of clay mineral that has a high capacity to absorb and retain moisture between its molecular layers. This causes the soil to swell significantly when wet. This property is what makes black soil so resilient during dry spells for crops like cotton.

84. (A) P-III, Q-IV, R-I, S-II
Different environmental conditions produce soils with distinct physical features. Sandy desert soils often have high salt concentrations, while waterlogged peaty soils are heavy and acidic. Volcanic soils are famous for the deep cracks they develop as they dry out in the heat. Meanwhile, soils formed in crystalline rock areas are characterized by a reddish color due to iron and a lack of lime.

85. (A) It is continuously renewed by annual floods depositing fresh fine silt.
In river plains, the newer alluvial soil found in low-lying areas is much more productive than older deposits on higher ground. This is because the river brings in a fresh layer of nutrient-rich silt and clay every year during the monsoon floods. This constant renewal prevents the soil from becoming exhausted, making it ideal for intensive farming without the need for artificial fertilization.

86. (A) I and II only
Bangar represents the older alluvium that was deposited by rivers in the past. It is typically found in higher areas that are now above the reach of regular annual floods. Because it is older and not refreshed by new silt, it is generally less fertile than the newer Khadar soil. It often contains calcareous concentrations, making it distinct from productive, low-lying floodplains.

87. (A) Severe loss of nutrients like silica and lime due to leaching.
Laterite soils form in tropical areas where heavy rainfall washes away most of the essential plant nutrients through a process called leaching. This specifically removes soluble minerals like silica and lime, leaving the soil acidic and rich only in iron and aluminum. Without the addition of fertilizers and organic manure, these soils cannot support healthy crop growth as they lack fundamental components.

88. (D) Wind erosion - Most prominent in heavy rainfall areas.
Soil erosion takes different forms depending on the climate. While water-driven erosion like sheet and gully formation is common in rainy regions, wind erosion is the dominant force in dry, arid landscapes. In these areas, the lack of moisture and vegetation leaves the soil loose and unprotected. Therefore, associating wind erosion with heavy rainfall areas is incorrect, as water normally binds soil.

89. (B) By ploughing at right angles to the slope, creating barriers to downward water flow.
Erosion in hilly areas is driven by the speed of water flowing down the slope. By ploughing across the slope rather than up and down, farmers create a series of small ridges and furrows. These act as natural barriers that slow the movement of water and encourage it to seep into the soil. This technique significantly reduces the amount of fertile topsoil lost.

90. (A) I, II, III, IV
Water erosion begins with the physical impact of raindrops on bare soil, which displaces small particles. This progresses to the uniform removal of the topsoil layer across a wide area. As the water concentrates, it begins to carve small, shallow channels into the ground. If left unchecked, these channels deepen and widen into large ravines, representing the most severe stage of land degradation.

91. (D) Direct impact of falling raindrops (Splash erosion).
Trees and plants are powerful tools for soil conservation. Their leaves and branches form a canopy that catches rain before it hits the ground. This reduces the kinetic energy of the water, preventing it from striking the soil directly and splashing away fine particles. Along with the roots that anchor the soil, this protective covering ensures that the topsoil remains intact during rainfall.

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92. (A) Both A and R are true and R is the correct explanation of A.
Reclaiming alkaline soil requires changing its chemical balance to remove excess sodium. Gypsum is an ideal amendment because it provides a steady supply of calcium. This calcium replaces the sodium that is tightly bound to the soil clay particles. Once freed, the sodium can be washed out of the root zone with irrigation water, which improves the soil's structure for farming.

93. (A) I, II and III
Red soils form through the weathering of ancient crystalline rocks in drier regions. Their color comes from the wide diffusion of iron throughout the soil profile. In wetter conditions, the iron becomes hydrated, turning the soil yellow. While they are important for agriculture, these soils are naturally deficient in nitrogen, phosphorus, and organic matter, so they are not inherently fertile without manure.

94. (A) Black, heavy, and highly acidic nature.
Peaty soils are unique because they develop in areas with high humidity and significant rainfall, which prevents the complete decomposition of organic matter. As a result, these soils accumulate large amounts of organic material, making them dark in color and very heavy. They are also typically highly acidic. These properties distinguish them from sandy desert soils or the clay-rich volcanic soils found elsewhere.

95. (A) P-III, Q-IV, R-I, S-II
Different strategies are used to protect soil based on the terrain and climate. Covering the ground with organic material helps retain moisture and prevent erosion. In other areas, alternating different crops in strips helps break the flow of wind and water. For steep hills, building level steps or small rock dams across channels are effective ways to slow down runoff and capture topsoil.

96. (D) Nagapattinam
Red soil is the most widespread soil type in Tamil Nadu, covering large parts of the central and southern regions. However, its presence is limited in the coastal deltas. In a district like Nagapattinam, which is located in the heart of the Cauvery delta, the soil is predominantly alluvial, composed of silt and clay deposited by the river. Therefore, it lacks red soil characteristics.

97. (A) I, II, IV and V
A mature soil profile is organized into distinct layers. The surface is covered with organic matter, followed by the topsoil where minerals and organics mix. Below the topsoil lies a zone that often loses minerals through leaching, while the subsoil below that actually accumulates them. The bottom layers consist of weathered rock material resting on the solid bedrock. This sequence reflects geological history.

98. (B) Usara - Saline and Alkaline Soil.
Traditional names for Indian soils often describe their productivity or physical properties. Soils that are high in salt and unfit for farming are known locally by terms that mean barren. Meanwhile, the rich black soil of the Deccan is often called regur, and river-deposited silts are divided into older and newer categories. These local terms provide a practical understanding of agricultural potential.

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99. (A) It hardens greatly like a brick upon exposure to air and drying.
Laterite soil is named after the Latin word for brick because of its unique physical transformation. When the soil is moist, it is relatively soft and can be easily cut into blocks. However, once these blocks are exposed to the sun and air, they undergo a chemical change that makes them extremely hard and durable. This property has made laterite a traditional building material.

100. (A) I, II, III, IV
The landscape of Tamil Nadu is dominated by four main soil groups. Red soil is by far the most common, followed by the clay-rich black soils found in the western and southern districts. Alluvial soils occupy the fertile river deltas and coastal areas, representing a significant but smaller portion of the state. Laterite soils, requiring specific high-rainfall conditions, have the most limited distribution.

101. (A) Naturally occurring inorganic substance with a definite chemical structure.
In the study of geography and geology, a mineral is defined by several specific criteria. It must be a substance created by natural processes, not by

humans. It is inorganic, meaning it is not made of living matter, and it has a fixed chemical composition and an orderly internal structure. These characteristics distinguish minerals from rocks, which are instead made of mixtures of minerals.

102. (A) Both A and R are true and R is the correct explanation of A.
The southern and central parts of India are a storehouse of metallic wealth. This is because the region is part of an ancient stable crust composed of igneous and metamorphic rocks. Over billions of years, geological processes concentrated metals like iron, manganese, and gold within these formations. As a result, the peninsular shield is the primary source for the country's metal-based industries.

103. (B) Mica, Limestone, Graphite
Minerals are divided into two main groups based on whether they contain metals. Metallic minerals like iron, copper, and bauxite are processed to extract their metal content. Non-metallic minerals, however, are used for their unique physical or chemical properties in their original or refined state. This group includes diverse substances such as mica, which is an insulator, limestone for construction, and graphite.

104. (A) P-II, Q-I, R-IV, S-III
Mining in India is concentrated in famous locations known for specific resources. The deep mines of Karnataka were once the primary source of gold. In the east, the fields of Jharkhand provide much of the nation's high-quality coal. Central India is home to the country's only active diamond mines. Meanwhile, the southern region of Neyveli is the principal producer of brown coal.

105. (D) Marmagao
India is a major exporter of iron ore, particularly to East Asian nations. Much of the ore from the western mining belts is shipped through a deep-water port on the Goa coast. This facility is strategically located to handle bulk carriers and is specially equipped for the efficient loading of iron ore. It plays a critical role in the maritime trade of the region.

106. (A) I and II only
Petroleum and natural gas are found trapped in the sedimentary rock layers of various Indian basins. The primary government agency leads the effort to explore and extract these resources. Despite significant domestic production from offshore and onshore fields, India's energy demand far exceeds its supply. Consequently, the country remains heavily dependent on imports to meet its petroleum needs, making self-sufficiency a future goal.

107. (B) Assam; it is the oldest functioning oil well in India.
The history of the Indian oil industry began in the late nineteenth century in the remote forests of the northeast. A small town in Assam became the site of the country's first successful oil well. Today, this location remains historically significant as it hosts the oldest continuously producing oil field in the country. It represents the birth of modern petroleum exploration in India.

108. (B) Khetri - Karnataka
Bauxite deposits are found in several states, including the high plateaus of Odisha and Chhattisgarh. However, Khetri is famous as a copper-producing center and is located in the state of Rajasthan, not Karnataka. While Karnataka does have various mineral resources, it is not the home of the Khetri mines. This highlights the distinct geographic localization of different metallic ores across India's provinces.

109. (B) 10 kg
Manganese is an indispensable additive in the modern steel-making process. It acts as a deoxidizing and desulfurizing agent, improving the strength and durability of the final product. On average, a relatively small amount of manganese, approximately ten kilograms, is needed for every tonne of steel produced. Because of this essential role, manganese reserves and production are closely tied to national iron.

110. (A) I, II, III, IV
Refining crude oil involves heating it to separate different components based on their boiling points. The lightest products, which vaporize first at lower temperatures, include fuels for passenger cars. As temperatures increase, heavier liquids like those used for lighting and aviation

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are collected. This is followed by diesel for heavy machinery. The heaviest fractions are used as thick fuel for industrial boilers.

111. (D) Electrical and electronic industry
Mica is a unique mineral prized for its ability to split into extremely thin, flexible sheets. It possesses exceptional dielectric strength and resistance to high temperatures, making it a perfect insulator. Despite various synthetic materials, natural mica remains a critical component in the electronics and electrical industries. It is used in household appliances, heating elements, complex circuitry, and high-voltage power equipment.

112. (D) A is false but R is true.
While limestone is the fundamental raw material for cement, its utility extends far beyond a single industry. It is used as a flux in steel smelting, a soil conditioner in agriculture, and a chemical ingredient in various manufacturing processes. However, the claim that it is the primary source of calcium carbonate for cement clinker is entirely correct. Therefore, the mineral is versatile.

113. (A) I, II and IV
Bauxite is the only ore used commercially to produce aluminum, a metal essential for modern aerospace and transportation due to its strength and light weight. India is a significant global producer with vast reserves. However, bauxite is typically found near the surface and is extracted through open-pit mining, which has a substantial environmental impact on the local landscape and regional ecosystems.

114. (D) Complete removal of topsoil and vegetation cover
Open-cast mining involves excavating a large pit to reach minerals located close to the surface. The first and most drastic step in this process is the clearing of all trees, plants, and fertile topsoil from the site. This leads to immediate habitat loss, increased soil erosion, and a total transformation of the local environment. The physical destruction of the land surface is direct.

115. (A) P-III, Q-I, R-II, S-IV
The mineral map of Tamil Nadu shows clear regional concentrations. The central plains around Ariyalur are the heart of the limestone and cement industries. In contrast, the hilly areas near Salem are famous for magnesite. The southern beaches provide the state's titanium-bearing sands. Meanwhile, the northern coastal district of Cuddalore is synonymous with large-scale mining of brown coal for thermal power plants.

116. (C) Energy minerals / Mineral fuels
Minerals are often grouped by their primary economic function. While some provide metals and others are used in construction, certain minerals are prized for the energy they release when processed or burned. Petroleum and natural gas, along with coal, fall into this vital category. They are fundamental fossil fuels that power transportation, electricity generation, and industrial heating, making them important modern resources.

117. (A) I, II, III and V
Mining projects often occur in forest areas inhabited by tribal groups, leading to significant displacement and loss of traditional livelihoods. While the government has introduced laws to protect tribal lands and ensure that communities benefit from mineral wealth through special funds, the process of rehabilitation remains complex. Constitutional safeguards exist, but the immediate impact of mining on these populations remains a challenge.

118. (D) Thorium - Extracted from Monazite sands
Nuclear power generation relies on specific heavy elements that can undergo or facilitate fission. In India, a particular coastal mineral is of extreme strategic importance because it contains significant amounts of thorium. This element is a key part of the nation's long-term plan for energy independence through advanced nuclear reactors. These beach sands are found extensively along the southern and eastern coasts.

119. (B) Production of high-temperature ceramics and refractories
Zircon is a heavy mineral found in the coastal placer deposits of Tamil Nadu. It is highly valued for its exceptional resistance to heat and chemicals. Its primary industrial application is in the manufacturing of specialized ceramics and refractory materials that can withstand the extreme temperatures found in furnaces, kilns,

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139. (B) Regular and cheap supply of electricity.
The production of aluminum is a two-step process involving the refining of ore and the smelting of the resulting oxide. The second stage requires an enormous amount of electrical energy to break the chemical bonds and extract the pure metal. Because of this, aluminum plants are always located near major power sources or in areas with very low electricity costs.

140. (A) I, II, III, IV
Water erosion is a progressive process that intensifies over time if the land is left unprotected. It starts with individual raindrops hitting the soil, which loosens particles. Next, surface runoff washes away a thin, uniform layer of the best soil. As the water gathers into small streams, it carves out minor channels. Eventually, these channels grow into deep, wide ravines.

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incredibly fortunate to possess the vast majority of the country's total reserves of this fuel. Estimates show that more than eighty percent of all lignite in India is located within the state's borders. This massive concentration has allowed for development of large-scale mining industries.

130. (I, II, III, IV, V)
A soil profile matures from the bottom up as rock breaks down and organic matter accumulates at the top. The sequence starts with the solid bedrock at the very base. Above this lies a layer of partially weathered rock material. This is followed by the subsoil and then topsoil, where organic and mineral materials mix. The uppermost layer consists of organic debris.

131. (B) 1956
To improve agricultural productivity across the newly independent nation, the Indian government recognized the need for a systematic study of land resources. Under the national agricultural research council, a dedicated organization was established in the mid-1950s. This body was tasked with mapping and classifying diverse soil types found throughout the subcontinent, providing the scientific foundation for modern land-use planning and strategies.

132. (D) A is false but R is true.
Coastal sands containing monazite are not open to unrestricted private processing because they are considered strategic national resources. This is because monazite is the primary source of thorium, an element that is strictly regulated under national laws concerning nuclear energy. The extraction and handling of these materials are managed by the government to ensure national security and strategic goals.

133. (A) I, II and III
The current mineral policy for India aims for a massive increase in production while ensuring sustainable and inclusive growth. It introduces specialized zones for mining to streamline development and places a strong emphasis on the welfare of people living in mining regions. It also promotes the use of all available transport methods, including inland and coastal waterways, to move minerals.

134. (D) Temperature and precipitation.
Climate is the most important active factor in the creation of soil. It determines how fast rocks break down and what chemical reactions occur. Specifically, the amount of rainfall affects the degree of leaching and moisture available for plants, while temperature controls the rate of chemical weathering and organic matter decomposition. Together, these two factors dictate the regional soil development.

135. (A) P-III, Q-IV, R-II, S-I
Understanding the processes that shape the earth is essential for soil science. Rocks are physically and chemically broken down through natural exposure, while water moving through the soil washes away important nutrients. A vertical view of the resulting layers shows how they have developed over time. Finally, the dark, rich material that gives soil its fertility is organic decay.

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136. (C) Provision of assured and proper irrigation facilities.
Desert soils are characterized by high sand content and low organic matter, which limits their ability to support crops in a dry climate. However, these soils often contain sufficient minerals for plant growth. If water can be consistently provided through modern irrigation systems, such as canals or tube wells, these arid lands can be transformed into productive farms for wheat.

137. (A) II, III and IV
India's mineral wealth is concentrated in its ancient plateaus and sedimentary basins. While the peninsular region holds nearly all the coal and metallic ores, the younger rock formations in states like Assam and Gujarat are rich in oil and gas. Rajasthan is a major center for non-ferrous metals like lead and zinc. However, India still lacks sufficient copper reserves.

138. (A) Cauvery - Alluvial Soil
Rivers are the primary agents for the formation of alluvial soils in coastal regions. As a river flows towards the sea, it slows down and deposits the fine silt and clay it has carried from the mountains and plains. The Cauvery River, which flows through the heart of Tamil Nadu, has created a vast and fertile deltaic region composed of silts.

(C) IV, II, I, III
(D) II, IV, III, I
(E) Answer not known

33. Which of the following forest types is highly concentrated in the central parts of India, particularly in Madhya Pradesh and Chhattisgarh, and is crucial for the livelihood of local tribes collecting minor forest produce?
(A) Tropical Wet Evergreen Forests
(B) Montane Temperate Forests
(C) Littoral and Swamp Forests
(D) Tropical Dry Deciduous Forests
(E) Answer not known

34. Identify the correct statement about India's Montane Forests.
(A) The southern montane forests, unlike Himalayan forests, completely lack coniferous tree species like pine and deodar.
(B) Montane forests in South India are found at much higher elevations compared to the Himalayas to reach similar temperate conditions.
(C) Montane forests are characterized by a single, uniform type of vegetation from the foothills to the snowline.
(D) The tree line in the Himalayas occurs at a significantly lower altitude than in the Alps.
(E) Answer not known

35. Consider the following statements about the Shola forests of Southern India:
I. They are stunted tropical montane evergreen forests.
II. They are found in the valleys separated by rolling grasslands.
III. They are characterized by high endemism in flora and fauna.
IV. They are primarily found in the Nilgiris, Anamalai, and Palani hills.
V. They frequently experience devastating natural forest fires which help in their regeneration.
Which of the given statements are correct?
(A) I, II, III and IV
(B) I, III, IV and V
(C) I, II and IV
(D) II, III and V
(E) Answer not known

36. Identify the incorrect statement regarding the ecological significance of Mangrove forests.
(A) They act as natural barriers against coastal erosion and storm surges.
(B) They are highly sensitive to soil salinity and cannot survive in brackish water.
(C) They serve as vital breeding and nursery grounds for marine species.
(D) They play a crucial role in carbon sequestration, often referred to as 'blue carbon'.
(E) Answer not known

37. Which of the following is NOT typically considered a direct consequence of severe deforestation in the Western Ghats?
(A) Immediate increase in the groundwater table level
(B) Increase in human-wildlife conflicts
(C) Enhanced soil erosion and frequency of landslides
(D) Loss of endemic biodiversity
(E) Answer not known

38. What is the most appropriate description of the 'Green India Mission' (GIM)?
(A) A scheme solely focused on planting exotic, fast-growing timber species across barren wastelands.
(B) A project to legally hand over all protected areas to local panchayats for agricultural expansion.
(C) Initiative under the National Action Plan on Climate Change (NAPCC) to protect and restore India's diminishing forest cover.
(D) An international treaty signed by India to halt global deforestation and land degradation by 2030.
(E) Answer not known

39. In a scenario where a state government wants to curb the rapid expansion of desertification along its borders, which ecological strategy would be most effectively applied?
(A) Introducing tropical wet evergreen species to increase rainfall.
(B) Draining local wetlands to plant commercial teak plantations.
(C) Removing existing scrub vegetation to allow natural grass growth.
(D) Creating shelterbelts using drought-

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CHAPTER 05
Forest and Wildlife

1. Consider the following statements regarding the ecological importance of forests:
I. Forests act as a massive carbon sink by absorbing atmospheric carbon dioxide during photosynthesis.
II. Forests increase surface water run-off, leading to enhanced groundwater depletion in hilly terrains.
III. The root systems of forest trees help in binding the soil, thereby reducing soil erosion.
Which of the given statements is/are correct?
(A) I and III
(B) II and III
(C) I only
(D) II only
(E) Answer not known

2. The following question consists of two statements, one labeled as Assertion (A) and the other as Reason (R). Examine these two statements carefully and select the correct answer.
Assertion (A): The total forest cover of India has not yet reached the targeted 33% of the total geographical area as stipulated by the National Forest Policy.
Reason (R): Rapid urbanization, agricultural expansion, and infrastructural development have significantly slowed down the net increase in dense forest cover.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

3. Match the following items in List I with their descriptions in List II:
List I: (Forest Classifications)
P. Reserved Forests
Q. Protected Forests
R. Unclassed Forests
S. Village Forests
List II: (Features)
I. Forests owned by government or private individuals without specific protection status
II. Rights like hunting and grazing are completely banned unless specifically permitted
III. Assigned to local village communities for sustainable management
IV. Local rights like grazing are permitted unless specifically prohibited
(A) P-II, Q-IV, R-I, S-III
(B) P-IV, Q-II, R-III, S-I
(C) P-II, Q-I, R-IV, S-III
(D) P-I, Q-IV, R-II, S-III
(E) Answer not known

4. Which of the following pairs concerning the classification of forests in India is correctly matched?
(A) Reserved Forests - Constitute the smallest percentage of the country's total forest area in the current classification.
(B) Unclassed Forests - Include wastelands owned by the government or private persons.
(C) Protected Forests - Completely closed to all local tribal populations for the collection of non-timber produce.
(D) Village Forests - Directly controlled and commercially exploited by agencies of the Central Government.
(E) Answer not known

5. Identify the correct decreasing sequence of Indian states based on their total forest cover area as per India State of Forest Report (ISFR) findings:
(A) Madhya Pradesh > Arunachal Pradesh > Chhattisgarh > Odisha

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19. If an afforestation program is planned in a region of Tamil Nadu receiving less than 60 cm of annual rainfall with prolonged dry spells, which of the following species would be most successfully applied?
(A) Mahogany and Rosewood
(B) Acacia and Babool
(C) Teak and Sal
(D) Rhododendron and Juniper
(E) Answer not known

20. Based on the classification of Indian forests, which category encompasses forests that grow in marshy areas, estuaries, mudflats, and tidal creeks?
(A) Montane Subtropical Forests
(B) Littoral and Swamp Forests
(C) Tropical Moist Deciduous Forests
(D) Tropical Dry Evergreen Forests
(E) Answer not known

21. Consider the following statements regarding Tropical Moist Deciduous Forests:
I. They are found in regions receiving rainfall between 100 cm and 200 cm.
II. Teak is the most dominant and commercially significant species of this forest type.
III. They lack any undergrowth due to the dense canopy preventing sunlight from reaching the ground.
Which of the given statements is/are correct?
(A) I and II
(B) II and III
(C) I only
(D) III only
(E) Answer not known

22. The following question consists of two statements, one labeled as Assertion (A) and the other as Reason (R). Examine these two statements carefully and select the correct answer.
Assertion (A): The root systems of mangrove plants possess specialized structures called pneumatophores.
Reason (R): Pneumatophores grow upwards against gravity to help the plant breathe in anaerobic, waterlogged soil conditions.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

23. Match the following items in List I with their descriptions in List II:
List I: (Tree Species)
P. Sundari
Q. Pine
R. Sandalwood
S. Ebony
List II: (Forest Type)
I. Tropical Wet Evergreen Forest
II. Tropical Deciduous Forest
III. Montane Temperate Forest
IV. Mangrove Forest
(A) P-IV, Q-III, R-II, S-I
(B) P-IV, Q-II, R-I, S-III
(C) P-I, Q-III, R-II, S-IV
(D) P-III, Q-IV, R-II, S-I
(E) Answer not known

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24. Which of the following pairs of Montane forest zones and their dominant characteristics is incorrectly matched?
(A) Himalayan Foothills (up to 1000m) - Dominated primarily by tropical deciduous species like Sal and Shisham.
(B) Wet Temperate Zone (1000m - 2000m) - Characterized by broad-leaved evergreen trees such as oaks and chestnuts.
(C) Sub-alpine Zone (Above 3000m) - Dominated by tall, broad-leaved evergreen trees with exceptionally dense canopies.
(D) Temperate Zone (1500m - 3000m) - Dominated by various coniferous trees like pine, deodar, and silver fir.
(E) Answer not known

25. Identify the correct order of the following forest types in India based on their geographical extent from largest to smallest:
(A) Tropical Dry Deciduous > Tropical Moist Deciduous > Tropical Wet Evergreen
(B) Tropical Moist Deciduous > Tropical Dry Deciduous > Tropical Wet Evergreen
(C) Tropical Wet Evergreen > Tropical Moist Deciduous > Tropical Dry Deciduous
(D) Tropical Dry Deciduous > Tropical Wet Evergreen > Tropical Moist Deciduous

12. Consider the following forest canopy density classes:
I. Moderately Dense Forest
II. Scrub
III. Very Dense Forest
IV. Open Forest
Which of the following represents the correct descending order of their canopy percentage as defined by the Forest Survey of India?
(A) III, I, IV, II
(B) III, IV, I, II
(C) I, III, IV, II
(D) III, I, II, IV
(E) Answer not known

13. According to the National Forest Policy of India, what is the ideal percentage of geographical area that should be under forest cover in hilly and mountainous regions to maintain ecological balance?
(A) 33 percent
(B) 50 percent
(C) 60 percent
(D) 66 percent
(E) Answer not known

14. Identify the correct statement regarding the forest cover in India.
(A) The entire North-Eastern region of the country contains less than 33% of its geographical area under forest cover.
(B) Mangrove cover throughout India is exclusively and solely found within the regions of the Sunderbans delta.
(C) The state of Haryana currently possesses the highest percentage of forest cover relative to its geographical area.
(D) Tree patches outside recorded forest areas that are less than 1 hectare in size are assessed as tree cover.
(E) Answer not known

15. Consider the following statements about Tropical Wet Evergreen Forests in India:
I. They are predominantly found in the Western Ghats and the Andaman and Nicobar Islands.
II. The trees in these forests have a synchronized time for shedding their leaves.
III. They are characterized by a multi-layered structure with a dense canopy.
IV. Mahogany, Ebony, and Rosewood are important tree species found here.
V. They require a distinct dry season lasting for more than six months to thrive.
Which of the given statements are correct?
(A) I, II, III and IV
(B) I, III, IV and V
(C) I, III and IV
(D) II, IV and V
(E) Answer not known

16. Identify the incorrect statement regarding Unclassed Forests in India.
(A) They consist of inaccessible forests or unoccupied wastes.
(B) No systematic forest management is typically applied to these areas.
(C) They cannot be owned by private individuals or corporate bodies.
(D) They account for the remaining forest area after Reserved and Protected forests are demarcated.
(E) Answer not known

17. Which of the following is NOT a characteristic feature of Tropical Dry Deciduous forests?
(A) They transition into moist deciduous on the wetter margins and thorn forests on the drier margins.
(B) Trees shed their leaves completely during the dry season to conserve water.
(C) Tendu, palas, amaltas, and bel are common trees found in these forests.
(D) They have an extremely dense undergrowth of cane and bamboo year-round.
(E) Answer not known

18. What is the most appropriate ecological reason for preserving the Shola forests of the Nilgiris?
(A) Act as sponges to retain rainwater and form sources for perennial streams.
(B) They yield high quantities of commercially valuable timber such as teak and sal for heavy industry.
(C) They are the primary source of raw materials for the large-scale paper and pulp industry in Tamil Nadu.
(D) They prevent the spread of desertification from the adjacent arid plains of the Deccan plateau region.
(E) Answer not known

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and engines. This makes it an essential material for the foundry and aerospace sectors.

120. (A) I, II, III, IV
India's iron ore is concentrated in a few key geological provinces. The eastern state of Odisha holds the largest reserves and is the top producer. It is followed by the central state of Chhattisgarh, which also has massive high-grade deposits. Karnataka in the south represents the third major production hub. In contrast, northern plains states like Punjab have no significant iron ore resources due to deep alluvium.

121. (D) The removal and transportation of the top layer of soil by agents like water and wind.
Soil is a slowly forming resource that is constantly being shaped by natural forces. When the rate of soil loss exceeds the rate of formation, the land is degraded. This occurs when physical agents like moving water from rain or rivers, or the force of wind, detach and carry away fertile topsoil. This process is often accelerated by human actions.

122. (A) Both A and R are true and R is the correct explanation of A.
Red soil is the dominant soil type across Tamil Nadu because of the state's ancient geological history. The region is mostly made of crystalline and metamorphic rocks that are rich in iron. Under the tropical climate, these rocks break down and release iron oxides, which stain the soil a deep red. Since these rock formations cover the vast majority.

123. (B) Macro-nutrients, secondary nutrients, micro-nutrients, and physical parameters like pH.
A comprehensive assessment of soil quality is necessary for efficient farming. The national program for soil health provides detailed information on multiple indicators. This includes primary nutrients like nitrogen and potassium, secondary nutrients like sulfur, and essential trace elements like zinc and iron. Additionally, it measures physical and chemical properties such as acidity, giving farmers a complete picture of their soil.

124. (A) P-III, Q-IV, R-II, S-I
Various national organizations oversee different aspects of India's natural resources. Some focus on exploration and extraction of liquid and gaseous fuels. Others manage mining of solid fossil fuels like brown coal for electricity. Strategic minerals from coastal sands are processed by a dedicated rare earths agency, while the systematic study of agricultural soils falls under a major research council.

125. (A) In the abrasive industry for sandblasting and waterjet cutting.
Garnet is a group of hard, durable minerals found in the beach sands of Tamil Nadu. Because of its hardness and sharp-edged crystals, it is a perfect natural abrasive. It is used extensively in industrial processes for cleaning surfaces through sandblasting and as a cutting medium in high-pressure waterjets. These applications are vital for the ship-building and automotive industries.

126. (A) I and II only
Tamil Nadu is internationally renowned for its diverse and high-quality granite deposits, which come in a wide range of colors and patterns. This industry is a major source of revenue for the state, with large quantities of polished stones being exported for use in luxury construction. Granite is found in the crystalline rock formations of the interior districts.

127. (D) Sivaganga
Graphite is a crystalline form of carbon that is prized for its high conductivity and heat resistance. In Tamil Nadu, the most significant commercial deposits are found in the Sivaganga district. To process this ore, the state mineral corporation operates a dedicated facility that refines the raw material into a usable industrial product. This plant is a key part of the local economy.

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128. (C) Thanjavur - Alluvial Soil
Soil distribution in Tamil Nadu is closely linked to geography and hydrology. While hilly regions like the Nilgiris have acidic forest or laterite soils, the flat river deltas are composed of silt and clay. Thanjavur, located in the fertile heart of the Cauvery delta, is characterized by its deep and productive alluvial soil. This soil has supported intensive rice cultivation.

129. (C) Over 80%
Lignite, or brown coal, is a critical energy resource for southern India. Tamil Nadu is

(E) Answer not known

26. Which of the following best describes 'Non-Timber Forest Products' (NTFP)?
(A) High-quality processed wood products including plywood, veneers, and industrial paper pulp.
(B) Various synthetic products manufactured using specialized forest-derived chemical compounds.
(C) Valuable minerals and fossil fuel resources extracted from various types of forested lands.
(D) Biological goods other than timber, such as fruits, honey, and medicinal plants.
(E) Answer not known

27. The Sundarbans, the largest contiguous mangrove forest in the world, derives its name from which prominent tree species found there?
(A) Sundari
(B) Sisham
(C) Sal
(D) Sandalwood
(E) Answer not known

28. Consider the following statements about Tropical Thorn Forests:
I. They are found in regions receiving less than 50 cm of rainfall.
II. Trees are scattered and have deep roots to access groundwater.
III. Leaves are often modified into spines to reduce transpiration.
IV. This forest type is entirely absent in the peninsular plateau of South India.
Which of the given statements are correct?
(A) I, II and III
(B) I, III and IV
(C) I and II
(D) II and IV
(E) Answer not known

29. The following question consists of two statements, one labeled as Assertion (A) and the other as Reason (R). Examine these two statements carefully and select the correct answer.
Assertion (A): The Western Ghats are richer in biodiversity and tropical evergreen forests compared to the Eastern Ghats.
Reason (R): The Western Ghats receive heavier orographic rainfall from the South-West monsoon compared to the Eastern Ghats.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

30. Match the following items in List I with their descriptions in List II:
List I: (Mangrove Sites)
P. Bhitarkanika
Q. Coringa
R. Pichavaram
S. Vembanad
List II: (States)
I. Kerala
II. Tamil Nadu
III. Andhra Pradesh
IV. Odisha
(A) P-IV, Q-III, R-II, S-I
(B) P-III, Q-IV, R-II, S-I
(C) P-IV, Q-II, R-III, S-I
(D) P-II, Q-III, R-IV, S-I
(E) Answer not known

31. Which of the following pairs of tree adaptations and the corresponding forest type is correctly matched?
(A) Broad, drip-tip leaves - Tropical Thorn Forests
(B) Stilt roots and vivipary - Mangrove Forests
(C) Needle-like leaves - Tropical Wet Evergreen Forests
(D) Thick fleshy stems - Alpine Forests
(E) Answer not known

32. Consider the following vegetation zones of the Himalayas:
I. Coniferous Temperate Forests
II. Tropical Deciduous Forests
III. Alpine Meadows
IV. Wet Temperate Broadleaf Forests
Which of the following represents the correct ascending order of these zones by altitude (from lowest to highest)?
(A) II, IV, I, III
(B) II, I, IV, III

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(B) Arunachal Pradesh > Madhya Pradesh > Odisha > Chhattisgarh
(C) Madhya Pradesh > Chhattisgarh > Arunachal Pradesh > Odisha
(D) Chhattisgarh > Madhya Pradesh > Odisha > Arunachal Pradesh
(E) Answer not known

6. In the context of the India State of Forest Report (ISFR), how is 'Forest Cover' strictly defined?
(A) Lands strictly notified and demarcated as forests under the various sections of the Indian Forest Act, 1927.
(B) All lands containing any tree species covering a minimum area of 0.5 hectares without any specific canopy density.
(C) Lands with over 10% canopy density spanning more than 1 hectare, regardless of use.
(D) Only government-owned tracts covered with trees primarily utilized for large-scale commercial timber extraction.
(E) Answer not known

7. The India State of Forest Report (ISFR) is published periodically to assess the forest and tree cover of the country. What is the frequency of its publication?
(A) Annually
(B) Biennially (Every two years)
(C) Triennially (Every three years)
(D) Quinquennially (Every five years)
(E) Answer not known

8. Consider the following statements regarding the types of forests in India:
I. Tropical evergreen forests are found in areas receiving more than 200 cm of annual rainfall.
II. Tropical deciduous forests are also known as monsoon forests.
III. Montane forests in India are exclusively found in the Himalayan region and are absent in peninsular India.
IV. Thorn forests are characterized by trees with long roots and thick bark.
Which of the given statements are correct?
(A) I, II and III
(B) I, II and IV
(C) I and III
(D) II and IV
(E) Answer not known

9. The following question consists of two statements, one labeled as Assertion (A) and the other as Reason (R). Examine these two statements carefully and select the correct answer.
Assertion (A): Tropical dry deciduous forests form the largest forest cover type in India.
Reason (R): They thrive in regions receiving moderate rainfall between 70 cm and 100 cm, which covers a vast expanse of the Indian peninsula and northern plains.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

10. Match the following items in List I with their descriptions in List II:
List I: (Types of Forests)
P. Tropical Wet Evergreen Forests
Q. Tropical Moist Deciduous Forests
R. Tropical Dry Deciduous Forests
S. Tropical Thorn Forests
List II: (Annual Rainfall)
I. Less than 50 cm
II. 70 cm to 100 cm
III. 100 cm to 200 cm
IV. More than 200 cm
(A) P-IV, Q-III, R-II, S-I
(B) P-III, Q-IV, R-II, S-I
(C) P-IV, Q-II, R-III, S-I
(D) P-IV, Q-III, R-I, S-II
(E) Answer not known

11. Which of the following pairs of Indian forest type and its dominant geographic region is incorrectly matched?
(A) Alpine Forests - Aravalli Range of Rajasthan
(B) Tropical Evergreen Forests - Western slopes of the Western Ghats
(C) Tropical Moist Deciduous - Eastern parts of the peninsular plateau
(D) Mangrove Forests - Deltaic regions of the eastern coast
(E) Answer not known

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resistant thorn and scrub forest species.
(E) Answer not known

40. Under which broad classification of forestry is the practice of raising trees on farm lands along with agricultural crops categorized?
(A) Urban Forestry
(B) Extension Forestry
(C) Agro-forestry
(D) Recreation Forestry
(E) Answer not known

41. Consider the following statements about the National Forest Policy of 1988:
I. It shifted the focus from commercial timber extraction to environmental stability and ecological balance.
II. It emphasized the involvement of local communities in the protection and management of forests.
III. It mandated the complete privatization of all degraded forest lands to boost corporate afforestation.
Which of the given statements is/are correct?
(A) I and II
(B) II and III
(C) I only
(D) III only
(E) Answer not known

42. The following question consists of two statements, one labeled as Assertion (A) and the other as Reason (R). Examine these two statements carefully and select the correct answer.
Assertion (A): The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, recognizes community forest rights.
Reason (R): The Act aims to undo historical injustices by empowering forest-dwelling communities to manage, protect, and conserve their traditional forest resources.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

43. Match the following items in List I with their descriptions in List II:
List I: (Policies/Acts)
P. National Forest Policy 1988
Q. Forest Conservation Act 1980
R. Forest Rights Act 2006
S. Wildlife Protection Act 1972
List II: (Major Objectives)
I. Regulation of diversion of forest land for non-forestry purposes
II. Recognition of land tenure and livelihood rights of forest-dwelling tribes
III. Protection of plant and animal species and creation of Protected Areas
IV. Maintenance of environmental stability and ecological balance
(A) P-IV, Q-I, R-II, S-III
(B) P-I, Q-IV, R-II, S-III
(C) P-IV, Q-II, R-I, S-III
(D) P-IV, Q-I, R-III, S-II
(E) Answer not known

44. Which of the following pairs regarding the provisions of the Forest Rights Act (FRA) 2006 is correctly matched?
(A) Individual Forest Rights - Right to commercially clear-fell timber for the open market
(B) Nodal Agency for Implementation - Ministry of Environment, Forest and Climate Change exclusively
(C) Community Forest Rights - Right to protect, regenerate, or manage any community forest resource
(D) Gram Sabha - Possesses no legal authority in the process of determining forest rights
(E) Answer not known

45. Identify the correct chronological sequence of the following significant environmental and forestry milestones in India:
(A) Wildlife Protection Act → Forest Conservation Act → National Forest Policy → Forest Rights Act
(B) Forest Conservation Act → Wildlife Protection Act → Forest Rights Act → National Forest Policy
(C) National Forest Policy → Wildlife Protection Act → Forest Rights Act → Forest Conservation Act
(D) Wildlife Protection Act → National Forest

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(D) Gir National Park
(E) Answer not known

98. What is the primary relevant function of the 'Buffer Zone' in a Biosphere Reserve?
(A) Surrounds the core and is used for activities compatible with ecological practices.
(B) It acts as an area for massive industrial expansion to provide jobs for the local population.
(C) It is strictly closed off to all human entry, functioning in the same way as the core zone.
(D) It is an area reserved exclusively for the resettlement of populations displaced from the core area.
(E) Answer not known

99. If a state government wishes to upgrade a Wildlife Sanctuary to the status of a National Park to provide enhanced protection to its flora and fauna, under which legal instrument is this procedure carried out?
(A) Environment (Protection) Act, 1986
(B) Wildlife (Protection) Act, 1972
(C) Forest (Conservation) Act, 1980
(D) Biological Diversity Act, 2002
(E) Answer not known

100. Based on IUCN definitions, how does 'Extinct in the Wild' (EW) differ fundamentally from 'Extinct' (EX)?
(A) EX refers only to plant species, while EW refers only to animal species in the current system.
(B) EW means surviving in captivity, EX means zero living individuals globally.
(C) EW means the species hasn't been seen in 10 years, whereas EX means a period of 50 years.
(D) EX is a category used for species lost due to natural causes, whereas EW is for human-induced loss.
(E) Answer not known

101. Consider the following statements about the forests of Tamil Nadu:
I. Tamil Nadu possesses roughly a little over 20% of its geographical area under recorded forest area.
II. The forest cover is evenly distributed across all districts of the state.
III. The Western Ghats constitute the most biodiversity-rich forest regions within the state.
Which of the given statements is/are correct?
(A) I and III
(B) II and III
(C) I only
(D) III only
(E) Answer not known

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102. The following question consists of two statements, one labeled as Assertion (A) and the other as Reason (R). Examine these two statements carefully and select the correct answer.
Assertion (A): The actual forest cover of Tamil Nadu is lower than the national policy mandate of 33%.
Reason (R): Tamil Nadu lies largely in the rain shadow region of the Western Ghats, naturally limiting the geographical extent of dense, continuous forest ecosystems.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

103. Match the following items in List I with their descriptions in List II:
List I: (Forest Regions/Sites)
P. Pichavaram Mangroves
Q. Mudumalai Wildlife Sanctuary
R. Point Calimere Wildlife Sanctuary
S. KMTR (Kalakkad Mundanthurai)
List II: (Districts)
I. Nagapattinam
II. Cuddalore
III. Nilgiris
IV. Tirunelveli
(A) P-II, Q-III, R-I, S-IV
(B) P-III, Q-II, R-I, S-IV
(C) P-II, Q-I, R-III, S-IV
(D) P-I, Q-III, R-II, S-IV
(E) Answer not known

highways, railways, and powerlines through forest habitats
(D) Mining - Clear-felling of forests to extract sub-surface minerals like coal and bauxite
(E) Answer not known

52. Consider the following steps in the process of Compensatory Afforestation (CA) under the FCA, 1980:
I. Deposit of CA funds by the user agency into the CAMPA fund.
II. Proposal for diversion of forest land by a user agency.
III. Identification of equivalent non-forest land for afforestation.
IV. Approval of diversion by the Central Government.
Which of the following represents the correct logical sequence?
(A) II, III, I, IV
(B) II, IV, I, III
(C) III, II, I, IV
(D) II, I, III, IV
(E) Answer not known

53. The Compensatory Afforestation Fund Management and Planning Authority (CAMPA) was primarily created to manage funds collected for which specific purpose?
(A) To use funds from agencies for afforestation and conservation after forest land diversion.
(B) To provide direct cash transfers to various tribes affected by the implementation of the Forest Rights Act.
(C) To fund commercial logging operations and timber processing of the various State Forest Departments.
(D) To distribute financial subsidies for the purpose of importing foreign timber into the Indian markets.
(E) Answer not known

54. Identify the correct statement regarding the consequences of deforestation in India.
(A) Deforestation universally leads to a steady increase in regional annual rainfall due to altered surface albedo.
(B) Deforestation permanently increases the fertility of topsoil by exposing it to direct and intense sunlight.
(C) Deforestation causes fragmentation of wildlife habitats and intensifies human-wildlife conflicts.
(D) Deforestation directly leads to an immediate and significant reduction in atmospheric carbon dioxide levels.
(E) Answer not known

55. Consider the following statements about the Green India Mission (GIM):
I. It falls under the National Action Plan on Climate Change (NAPCC).
II. It targets the improvement of quality of forest cover and increase in forest area.
III. It aims to increase forest-based livelihood income for local communities.
IV. It exclusively focuses on mangrove restoration and ignores inland forests.
V. It seeks to enhance carbon sequestration capacity of Indian forests.
Which of the given statements are correct?
(A) I, II, III and V
(B) II, III, IV and V
(C) I, II and IV
(D) I, III, IV and V
(E) Answer not known

56. Identify the incorrect statement regarding the Forest Rights Act (FRA) 2006.
(A) It recognizes both individual rights to cultivated land and community rights over common property resources.
(B) Rights can be claimed only by individuals who can prove continuous residence in the forest for at least 75 years prior to 2005.
(C) It grants forest dwellers the absolute right to hunt wild animals for commercial trade.
(D) The Gram Sabha is the initiating authority for determining the nature and extent of Individual or Community Forest Rights.
(E) Answer not known

57. Which among the following is NOT an objective of the National Forest Policy of 1988?
(A) Increasing substantially the forest/tree cover in the country through massive afforestation.
(B) Encouraging the use of wood and timber as the primary fuel source for heavy industries to reduce fossil fuel dependence.
(C) Conserving the natural heritage of the country by preserving the remaining natural

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R. Periyar
S. Kanha
List II: (States)
I. Madhya Pradesh
II. Rajasthan
III. Kerala
IV. Karnataka
(A) P-IV, Q-II, R-III, S-I
(B) P-IV, Q-I, R-III, S-II
(C) P-II, Q-IV, R-I, S-III
(D) P-III, Q-II, R-IV, S-I
(E) Answer not known

71. Which of the following pairs concerning Elephant Reserves in India is incorrectly matched?
(A) Singhbhum Elephant Reserve - Jharkhand
(B) Nilgiri Elephant Reserve - Tamil Nadu
(C) Mayurjharna Elephant Reserve - West Bengal
(D) Kameng Elephant Reserve - Kerala
(E) Answer not known

72. Consider the following states:
I. Uttarakhand
II. Madhya Pradesh
III. Karnataka
IV. Maharashtra
Which of the following represents the correct decreasing order of these states based on their estimated tiger population as per recent estimation reports?
(A) II, III, I, IV
(B) III, II, I, IV
(C) II, I, III, IV
(D) I, II, III, IV
(E) Answer not known

73. Project Elephant was launched by the Government of India to protect elephants, their habitats, and corridors. In which year was it launched?
(A) 1982
(B) 1992
(C) 2002
(D) 2012
(E) Answer not known

74. Identify the correct statement regarding human-elephant conflict mitigation in India.
(A) The construction of rigid, insurmountable concrete walls across known migration corridors for elephants.
(B) Elephants strictly adhere to the boundaries of Protected Areas and never venture into agricultural lands.
(C) Project Elephant mandates the culling of adult elephants whenever they enter human-occupied settlements.
(D) Early warning systems using sensors and SMS alerts to villagers to reduce fatal encounters.
(E) Answer not known

75. Consider the following statements about the Indian Elephant (Elephas maximus indicus):
I. It is recognized as the National Heritage Animal of India.
II. It is listed as 'Endangered' on the IUCN Red List.
III. It is placed in Schedule I of the Indian Wildlife (Protection) Act, 1972.
IV. Both male and female Indian elephants always possess long, visible tusks.
V. Habitat fragmentation is one of the greatest threats to their survival.
Which of the given statements are correct?
(A) I, II, III and V
(B) II, III, IV and V
(C) I, III and IV
(D) I, II and IV
(E) Answer not known

76. Identify the incorrect statement regarding the management structure of Tiger Reserves in India.
(A) A Tiger Reserve legally consists of a 'Core' or critical tiger habitat and a surrounding 'Buffer' area.
(B) The designated Core area is required to be kept as inviolate for the purposes of tiger conservation.
(C) Tourism and minor forest produce collection are strictly banned in the Buffer zone.
(D) The State Government, on recommendation of the NTCA, officially notifies an area as a Tiger Reserve.
(E) Answer not known

77. Which of the following is NOT designated as a Tiger Reserve in India?
(A) Keoladeo National Park

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III. Trans-Himalayas
IV. Kaziranga (Assam)
(A) P-II, Q-IV, R-III, S-I
(B) P-IV, Q-II, R-I, S-III
(C) P-II, Q-III, R-IV, S-I
(D) P-I, Q-IV, R-III, S-II
(E) Answer not known

64. Which of the following pairs of endangered species and their conservation project is correctly matched?
(A) Great Indian Bustard - Project Tiger
(B) Nilgiri Tahr - Project Snow Leopard
(C) Gharial - Crocodile Conservation Project
(D) Olive Ridley Turtle - Project Elephant
(E) Answer not known

65. Identify the correct chronological order of the launch years of the following major wildlife conservation projects in India:
(A) Project Tiger → Crocodile Conservation Project → Project Elephant → Project Snow Leopard
(B) Project Elephant → Project Tiger → Project Snow Leopard → Crocodile Conservation Project
(C) Project Tiger → Project Elephant → Crocodile Conservation Project → Project Snow Leopard
(D) Crocodile Conservation Project → Project Tiger → Project Elephant → Project Snow Leopard
(E) Answer not known

66. In the context of biodiversity conservation, what does the term 'Endemism' precisely mean?
(A) A species naturally occurring in a specific, limited geographical area and nowhere else.
(B) A species that is currently on the verge of global extinction specifically due to human activities.
(C) An exotic species that has invaded a new ecosystem and threatens the local flora and fauna populations.
(D) A species that migrates across multiple continents during its life cycle for breeding and survival.
(E) Answer not known

67. The Wildlife (Protection) Act, which provides the legal framework for the protection of various species of wild animals and plants in India, was enacted in which year?
(A) 1972
(B) 1980
(C) 1986
(D) 2002
(E) Answer not known

68. Consider the following statements about Project Tiger:
I. It was launched in 1973 from the Jim Corbett National Park.
II. It operates as a Centrally Sponsored Scheme providing financial assistance to tiger range states.
III. The National Tiger Conservation Authority (NTCA) is the statutory body overseeing it.
IV. Its sole focus is to breed tigers in captivity for zoo exhibitions.
Which of the given statements are correct?
(A) I, II and III
(B) II, III and IV
(C) I and IV
(D) I and II
(E) Answer not known

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69. The following question consists of two statements, one labeled as Assertion (A) and the other as Reason (R). Examine these two statements carefully and select the correct answer.
Assertion (A): Recent tiger census reports indicate a steady increase in the overall wild tiger population in India.
Reason (R): Scientific management practices, rigorous anti-poaching measures, and the expansion of the Tiger Reserve network under NTCA have improved tiger habitats.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

70. Match the following items in List I with their descriptions in List II:
List I: (Tiger Reserves)
P. Bandipur
Q. Ranthambore

forests.
(D) Meeting the requirements of fuelwood, fodder, minor forest produce, and small timber of the rural and tribal populations.
(E) Answer not known

58. Which of the following approaches is most appropriate for ensuring the long-term success of afforestation programs in degraded rural landscapes?
(A) Fencing off the area completely with armed guards to strictly prevent any form of local community entry.
(B) Privatizing the land and allowing corporate monoculture plantations of industrial timber species.
(C) Using aerial seeding of various exotic species to cover the maximum area possible in the minimum time.
(D) Using Joint Forest Management to share benefits and responsibilities with local communities.
(E) Answer not known

59. In a scenario where a tribal community has traditionally collected minor forest produce (MFP) from a nearby sanctuary but is now being denied access by forest officials, which legal framework primarily supports their right to access?
(A) The Forest Rights Act of 2006, which recognizes tribal and traditional forest dweller rights.
(B) The Indian Forest Act of 1927, which deals with the legal status of reserved and protected forest areas.
(C) The Forest (Conservation) Act of 1980, which regulates the diversion of forest land for non-forest use.
(D) The Biological Diversity Act of 2002, which provides for conservation and sustainable use of resources.
(E) Answer not known

60. Based on ecological and geographical features, the 'Shola' forests of Tamil Nadu are primarily classified under which broader category?
(A) Tropical Dry Evergreen Forests
(B) Littoral and Swamp Forests
(C) Montane Sub-tropical and Temperate Forests
(D) Tropical Thorn Forests
(E) Answer not known

61. Consider the following statements regarding the Western Ghats Biodiversity Hotspot:
I. It is recognized globally for its high level of endemism, meaning many species found here are found nowhere else on Earth.
II. It traverses through six Indian states: Gujarat, Maharashtra, Goa, Karnataka, Kerala, and Tamil Nadu.
III. The hotspot status indicates that the region's biodiversity is entirely intact and faces no threat from human activities.
Which of the given statements is/are correct?
(A) I and II
(B) II and III
(C) I only
(D) III only
(E) Answer not known

62. The following question consists of two statements, one labeled as Assertion (A) and the other as Reason (R). Examine these two statements carefully and select the correct answer.
Assertion (A): The Indo-Burma biodiversity hotspot exhibits incredible species richness and endemism.
Reason (R): It acts as a biological crossroads where the floras and faunas of the Indian subcontinent, Indochina, and the Palearctic regions converge.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

63. Match the following items in List I with their descriptions in List II:
List I: (Indian Fauna)
P. Asiatic Lion
Q. One-horned Rhinoceros
R. Snow Leopard
S. Lion-tailed Macaque
List II: (Primary Natural Habitat)
I. Western Ghats
II. Gir Forest (Gujarat)

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(B) Pakke
(C) Namdapha
(D) Pilibhit
(E) Answer not known

78. What is the primary underlying cause of the increasing human-wildlife conflict in the fringes of protected areas in India?
(A) The sudden genetic mutation of certain herbivores turning them aggressive towards human populations.
(B) The complete eradication of poaching, leading to severe overpopulation beyond carrying capacity in parks.
(C) The deliberate introduction of foreign predator species into Indian forests by the forest departments.
(D) Habitat loss and fragmentation forcing wildlife to venture into human areas for food.
(E) Answer not known

79. If an Eco-Sensitive Zone (ESZ) is declared around a National Park, which of the following activities is typically subject to absolute prohibition within the zone?
(A) Ongoing traditional agricultural activities carried out by local resident communities.
(B) Massive commercial mining and stone quarrying operations.
(C) Small-scale organic farming practices within the immediate vicinity of the park.
(D) The use of existing village roads and pathways by the local population for transport.
(E) Answer not known

80. Based on the IUCN Red List classification, under which category does the 'Gharial', natively found in the Chambal river, fall?
(A) Vulnerable
(B) Endangered
(C) Critically Endangered
(D) Extinct in the Wild
(E) Answer not known

81. Consider the following statements regarding the Crocodile Conservation Project in India:
I. It was initiated in 1975 with the support of the United Nations Development Programme (UNDP).
II. It targeted the conservation of three crocodilian species: the freshwater crocodile, saltwater crocodile, and the gharial.
III. Captive breeding and "rear and release" programs were key successful components of this project.
Which of the given statements is/are correct?
(A) I and II
(B) II and III
(C) I only
(D) I, II and III
(E) Answer not known

82. The following question consists of two statements, one labeled as Assertion (A) and the other as Reason (R). Examine these two statements carefully and select the correct answer.
Assertion (A): The National Chambal Sanctuary is globally recognized as the most critical habitat for the survival of the Gharial.
Reason (R): The Chambal river remains relatively unpolluted and provides the extensive, deep, fast-flowing waters with steep sandbanks necessary for Gharial nesting.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

83. Match the following items in List I with their descriptions in List II:
List I: (National Parks)
P. Keibul Lamjao National Park
Q. Hemis National Park
R. Kaziranga National Park
S. Silent Valley National Park
List II: (Flagship Species/Feature)
I. Only floating national park (Phumdis)
II. High-altitude habitat of the Snow Leopard
III. Highest density of One-horned Rhinoceros
IV. Pristine tropical evergreen forest in the Nilgiris
(A) P-I, Q-II, R-III, S-IV
(B) P-II, Q-I, R-IV, S-III
(C) P-I, Q-III, R-II, S-IV
(D) P-III, Q-I, R-II, S-IV
(E) Answer not known

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Policy → Forest Conservation Act → Forest Rights Act
(E) Answer not known

46. What defines 'Social Forestry' as introduced in India?
(A) The strict exclusion of modern society from protected forest zones to ensure complete biodiversity preservation.
(B) The process of leasing out prime forest lands to social clubs and various NGOs for the purpose of eco-tourism.
(C) The utilization of various forest resources solely for the creation of large-scale social welfare housing schemes.
(D) Management of forests and afforestation on barren lands for environmental and rural development.
(E) Answer not known

47. Who among the following initiated the 'Van Mahotsav' movement in India in the year 1950 to create enthusiasm among the masses for forest conservation and planting trees?
(A) Jawaharlal Nehru
(B) K. M. Munshi
(C) Sunderlal Bahuguna
(D) Medha Patkar
(E) Answer not known

48. Consider the following statements about the components of Social Forestry in India:
I. Farm Forestry involves farmers raising trees for commercial and non-commercial purposes on their own land.
II. Community Forestry relies on planting trees on public or community lands rather than private lands.
III. Extension Forestry aims at increasing the boundaries of forests by planting trees on road, rail, and canal sides.
IV. Social forestry strictly prohibits the planting of fruit-bearing trees due to wildlife attraction risks.
Which of the given statements are correct?
(A) I, II and III
(B) II, III and IV
(C) I and IV
(D) I and II
(E) Answer not known

49. The following question consists of two statements, one labeled as Assertion (A) and the other as Reason (R). Examine these two statements carefully and select the correct answer.
Assertion (A): Deforestation in the Himalayan region has severely increased the occurrence of devastating floods in the northern plains of India.
Reason (R): The removal of forest cover decreases the water-holding capacity of the soil, leading to rapid surface runoff during heavy monsoons.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

50. Match the following items in List I with their descriptions in List II:
List I: (Forestry Practices)
P. Silviculture
Q. Agroforestry
R. Urban forestry
S. Compensatory afforestation
List II: (Descriptions)
I. Raising of trees and plants on public and private lands in and around cities
II. Afforestation done in lieu of forest land diverted for non-forest purposes
III. The science and art of cultivating forest crops
IV. Combining agricultural crops with tree farming
(A) P-III, Q-IV, R-I, S-II
(B) P-IV, Q-III, R-I, S-II
(C) P-III, Q-I, R-IV, S-II
(D) P-II, Q-IV, R-I, S-III
(E) Answer not known

51. Which of the following pairs concerning the causes of deforestation is incorrectly matched?
(A) Shifting Cultivation - Slash and burn agriculture primarily practiced in North-East India
(B) Overgrazing - Controlled rotational grazing managed by scientific forest officers
(C) Linear Intrusions - Construction of

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III. Odisha
IV. Madhya Pradesh
(A) P-II, Q-I, R-IV, S-III
(B) P-I, Q-II, R-IV, S-III
(C) P-II, Q-IV, R-I, S-III
(D) P-III, Q-I, R-IV, S-II
(E) Answer not known

91. Which of the following pairs representing an Indian Biosphere Reserve and its inclusion status in the UNESCO Man and the Biosphere (MAB) program is incorrectly matched?
(A) Seshachalam Hills - Included in UNESCO MAB
(B) Gulf of Mannar - Included in UNESCO MAB
(C) Nilgiri - Included in UNESCO MAB
(D) Sundarbans - Included in UNESCO MAB
(E) Answer not known

92. Consider the following Biosphere Reserves of India:
I. Nilgiri
II. Nanda Devi
III. Gulf of Mannar
IV. Great Nicobar
Which of the following represents the correct chronological order of their designation by the Government of India (earliest to latest)?
(A) I, II, III, IV
(B) I, III, II, IV
(C) II, I, IV, III
(D) I, IV, II, III
(E) Answer not known

93. Out of the 18 Biosphere Reserves established by the Government of India, how many have been internationally recognized under the UNESCO Man and the Biosphere (MAB) program?
(A) 10
(B) 12
(C) 15
(D) 18
(E) Answer not known

94. Identify the correct statement regarding critically endangered species in India.
(A) Once a species is declared critically endangered, it means it has effectively gone extinct in the wild.
(B) The Indian Peafowl (Peacock) is currently listed as a critically endangered species due to habitat loss.
(C) Critically endangered marine species like the Dugong are exclusively found in the remote Andaman Islands.
(D) The Great Indian Bustard's population is threatened by collisions with power lines.
(E) Answer not known

95. Consider the following characteristics regarding a species classified as 'Vulnerable' on the IUCN Red List:
I. It faces a high risk of extinction in the wild in the medium-term future.
II. Its population has undergone a significant reduction over a specified period.
III. Its geographic range may be severely restricted or highly fragmented.
IV. It is considered to be at a higher risk than 'Endangered' species.
V. Conservation efforts can potentially downgrade its status to 'Near Threatened'.
Which of the given statements are correct?
(A) I, II, III and V
(B) II, III, IV and V
(C) I, III and IV
(D) I, II and IV
(E) Answer not known

96. Identify the incorrect statement regarding species classified as 'Extinct' or 'Extinct in the Wild' under IUCN.
(A) A species is Extinct when there is no reasonable doubt that the last individual has died.
(B) The Asiatic Cheetah is considered extinct in India.
(C) The Indian Tiger was recently moved to the 'Extinct in the Wild' category due to poaching.
(D) 'Extinct in the Wild' means the species only survives in cultivation, in captivity, or as a naturalized population outside its historical range.
(E) Answer not known

97. Which among the following is NOT currently designated as a Biosphere Reserve in India?
(A) Agasthyamalai
(B) Achanakmar-Amarkantak
(C) Cold Desert

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84. Which of the following pairs of Wildlife Sanctuaries and their dominant protected fauna is correctly matched?
(A) Chilika Lake Sanctuary - Hoolock Gibbon
(B) Gahirmatha Marine Sanctuary - Olive Ridley Sea Turtles
(C) Desert National Park - Nilgiri Tahr
(D) Vedanthangal Bird Sanctuary - Indian Rhinoceros
(E) Answer not known

85. Consider the following IUCN Red List threat categories:
I. Near Threatened
II. Vulnerable
III. Endangered
IV. Critically Endangered
Which of the following represents the correct sequence moving from least risk to the highest risk of extinction?
(A) I, II, III, IV
(B) II, I, IV, III
(C) III, II, IV, I
(D) I, III, II, IV
(E) Answer not known

86. In the context of biodiversity conservation, what does the term 'Core Zone' precisely mean in a Biosphere Reserve?
(A) An area primarily used for intensive commercial agriculture and large-scale human settlement.
(B) A zone dedicated exclusively to heavy industrial development to provide funding for the reserve.
(C) A strictly protected area contributing to conservation without human interference.
(D) An area where massive timber extraction is legally permitted for high-value commercial use.
(E) Answer not known

87. Which was the first National Park established in India (in 1936), originally known as Hailey National Park?
(A) Kanha National Park
(B) Kaziranga National Park
(C) Ranthambore National Park
(D) Jim Corbett National Park
(E) Answer not known

88. Consider the following statements about India's Protected Area Network:
I. National Parks are given a higher degree of protection than Wildlife Sanctuaries.
II. Grazing of livestock is generally permitted inside a National Park.
III. Conservation Reserves act as buffer zones to or connectors between established National Parks and Sanctuaries.
IV. Community Reserves are usually formed on private or community land where people volunteer to conserve wildlife.
Which of the given statements are correct?
(A) I, III and IV
(B) II, III and IV
(C) I and II
(D) III and IV
(E) Answer not known

89. The following question consists of two statements, one labeled as Assertion (A) and the other as Reason (R). Examine these two statements carefully and select the correct answer.
Assertion (A): Community Reserves are an innovative category in the Protected Area network of India introduced by amending the Wildlife Protection Act.
Reason (R): They aim to bring community-owned lands under legal protection where local people are willing to participate in wildlife conservation without losing their land ownership.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

90. Match the following items in List I with their descriptions in List II:
List I: (Biosphere Reserves)
P. Nanda Devi
Q. Nokrek
R. Pachmarhi
S. Similipal
List II: (States)
I. Meghalaya
II. Uttarakhand

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104. Which of the following pairs of forest type and its typical location in Tamil Nadu is correctly matched?
(A) Shola Forests - Coastal plains of Coromandel characterized by low-lying scrub and dry vegetation.
(B) Mangrove Forests - Higher elevations of the Palani Hills where temperate climatic conditions prevail.
(C) Tropical Wet Evergreen Forests - Windward western slopes of Anamalai and Nilgiris.
(D) Tropical Thorn Forests - High rainfall zones of Kanyakumari with dense canopy cover and high humidity.
(E) Answer not known

105. Consider the following Tamil Nadu districts:
I. Erode
II. Coimbatore
III. Dindigul
IV. Vellore
Which of the following represents the correct decreasing sequence of these districts based on their forest cover area?
(A) I, II, III, IV
(B) II, I, IV, III
(C) I, III, II, IV
(D) III, I, II, IV
(E) Answer not known

106. In the context of the Nilgiri ecosystem, what unique microclimatic condition defines the Shola forests?
(A) They are found exclusively in arid, high-temperature valleys with minimal moisture for growth.
(B) They are highly saline tidal zones experiencing diurnal inundation by seawater and estuaries.
(C) They are pure coniferous zones experiencing heavy seasonal snowfall during the winter months.
(D) Sheltered valleys with high moisture surrounded by frost-susceptible grasslands.
(E) Answer not known

107. The Pichavaram mangrove forest is located strategically between the estuaries of which two rivers in Tamil Nadu?
(A) Vellar and Coleroon (Kollidam)
(B) Cauvery and Vaigai
(C) Palar and Ponnaiyar
(D) Thamirabarani and Vaipar
(E) Answer not known

108. Consider the following statements about Tropical Wet Evergreen forests in Tamil Nadu:
I. They are restricted to the high rainfall regions of the Western Ghats like Tirunelveli and Kanyakumari districts.
II. They form part of the same contiguous ecological complex as the Silent Valley in Kerala.
III. They are completely devoid of epiphytes like orchids and ferns.
IV. Cullenia exarillata (Karayani) is a characteristic dominant tree species in these forests.
Which of the given statements are correct?
(A) I, II and IV
(B) II, III and IV
(C) I and III
(D) I, II and III
(E) Answer not known

109. The following question consists of two statements, one labeled as Assertion (A) and the other as Reason (R). Examine these two statements carefully and select the correct answer.
Assertion (A): The Shola forests of Tamil Nadu are highly sensitive to climate change and exotic species invasion.
Reason (R): Shola trees are slow-growing, highly habitat-specific endemics that struggle to compete with fast-growing invasive species like wattle and eucalyptus.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

110. Match the following items in List I with their descriptions in List II:
List I: (Wildlife Sanctuaries)
P. Srivilliputhur Sanctuary
Q. Vedanthangal
R. Gulf of Mannar
S. Mudumalai

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List II: (Flagship Species/Feature)
I. Oldest water bird sanctuary in the state
II. Marine biodiversity including Dugongs
III. Grizzled Giant Squirrel
IV. Significant elephant and tiger population
(A) P-III, Q-I, R-II, S-IV
(B) P-I, Q-III, R-II, S-IV
(C) P-III, Q-II, R-I, S-IV
(D) P-II, Q-I, R-III, S-IV
(E) Answer not known

111. Which of the following pairs of flora found in Tamil Nadu and their common characteristic is incorrectly matched?
(A) Kurinji (Strobilanthes kunthiana) - Blooms once in 12 years in the Western Ghats
(B) Prosopis juliflora (Seemai Karuvelam) - A highly beneficial endemic tree that boosts groundwater
(C) Avicennia marina - A dominant mangrove species in Pichavaram
(D) Teak (Tectona grandis) - A valuable timber species common in moist deciduous zones
(E) Answer not known

112. Consider the following Wildlife Sanctuaries of Tamil Nadu:
I. Mudumalai Wildlife Sanctuary
II. Point Calimere Wildlife Sanctuary
III. Vedanthangal Bird Sanctuary
IV. Sathyamangalam Wildlife Sanctuary
Which of the following represents the correct chronological order of their official establishment (earliest to latest)?
(A) III, I, II, IV
(B) I, III, II, IV
(C) I, II, III, IV
(D) III, II, I, IV
(E) Answer not known

113. The Muthupet mangrove forest, located at the southern end of the Cauvery delta, is predominantly characterized by the overwhelming dominance of which specific mangrove species?
(A) Rhizophora mucronata
(B) Sonneratia apetala
(C) Heritiera fomes (Sundari)
(D) Avicennia marina (Alaiyathi)
(E) Answer not known

114. Identify the correct statement regarding the Seagrass meadows of Tamil Nadu.
(A) They are extensively found in the Gulf of Mannar and Palk Bay regions.
(B) Seagrasses are a type of marine algae, not true flowering plants.
(C) They are completely devoid of any significant animal life or marine biodiversity.
(D) They require extremely deep, dark oceanic waters to survive.
(E) Answer not known

115. Consider the following statements about the ecological significance of Seagrass meadows in the Gulf of Mannar:
I. They act as the primary food source for the endangered Dugong (sea cow).
II. They help in stabilizing the sea bottom and coastal sediment, reducing coastal erosion.
III. They serve as crucial nursery grounds for many commercially important fish and crustacean species.
IV. They are highly efficient coastal carbon sinks (blue carbon).
V. They survive best in highly polluted, turbid waters from industrial runoffs.
Which of the given statements are correct?
(A) I, II, III and IV
(B) II, III, IV and V
(C) I, III and IV
(D) I, II and V
(E) Answer not known

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116. Identify the incorrect statement regarding the Tropical Dry Deciduous Forests of Tamil Nadu.
(A) They are found in areas receiving rainfall between 70 cm and 100 cm.
(B) These forests remain lush and green throughout the year, irrespective of the dry season.
(C) These forests form a transitional zone between the moist deciduous and the thorn forests.
(D) Species like sandalwood (Santalum album) are found in these tracts, particularly in the Javadi and Chitteri hills.
(E) Answer not known

117. Which of the following locations is NOT associated with significant Mangrove forest cover in Tamil Nadu?

(A) Ooty (Udhagamandalam)
(B) Pichavaram
(C) Muthupet
(D) Kodiakarai (Point Calimere)
(E) Answer not known

118. What is the most appropriate description of the ecological role of the coral reefs in the Gulf of Mannar Marine National Park?
(A) They act as physical barriers preventing any marine vessels from reaching the Tamil Nadu coastline.
(B) They are terrestrial ecosystems formed by ancient volcanic activity, unrelated to marine life forms.
(C) Highly productive ecosystems providing shelter and food for diverse marine organisms.
(D) They exist solely to trap oceanic plastics and pollutants to keep the open sea clean for navigation.
(E) Answer not known

119. To effectively conserve the critically endangered Dugong in Tamil Nadu, the state government recently announced the establishment of India's first Dugong Conservation Reserve. In which specific geographical region is this reserve planned?
(A) Coromandel Coast near Chennai
(B) Kanyakumari convergence zone
(C) Pulicat Lake
(D) Palk Bay
(E) Answer not known

120. Under the classification of protected areas in Tamil Nadu, Guindy National Park is unique because it is one of the few national parks in India that is:
(A) Located completely underwater in the coastal regions of the Bay of Bengal.
(B) Dedicated exclusively to the conservation of the Royal Bengal Tiger populations.
(C) Situated entirely within the limits of a major metropolitan city.
(D) Not administered by the Tamil Nadu Forest Department but by the local corporation.
(E) Answer not known

121. Consider the following statements about the Nilgiri Biosphere Reserve:
I. It was the first biosphere reserve established in India.
II. It encompasses territories in the states of Tamil Nadu, Kerala, and Karnataka.
III. The Mudumalai Wildlife Sanctuary and Mukurthi National Park are part of this reserve.
Which of the given statements is/are correct?
(A) I and II
(B) II and III
(C) I only
(D) I, II and III
(E) Answer not known

122. The following question consists of two statements, one labeled as Assertion (A) and the other as Reason (R). Examine these two statements carefully and select the correct answer.
Assertion (A): The Anamalai Tiger Reserve plays a critical role in landscape-level conservation in the Western Ghats.
Reason (R): It acts as a vital corridor connecting the forests of Parambikulam in Kerala with the forests of Eravikulam and Palani Hills, allowing genetic exchange of large mammals.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

123. Match the following items in List I with their descriptions in List II:
List I: (Tiger Reserves)
P. Kalakkad Mundanthurai
Q. Sathyamangalam
R. Anamalai
S. Mudumalai
List II: (Associated Rivers)
I. Moyar River
II. Thamirabarani River
III. Amaravathi River
IV. Bhavani River
(A) P-II, Q-IV, R-III, S-I
(B) P-I, Q-IV, R-II, S-III
(C) P-II, Q-I, R-IV, S-III
(D) P-III, Q-II, R-I, S-IV
(E) Answer not known

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named after the Sundari tree, which is the most dominant and ecologically significant mangrove species in this region. This tree provides durable timber and plays a crucial role in stabilizing the muddy banks of the tidal creeks.

28. (A) I, II and III
Thorn forests are found in semi-arid zones where rainfall is scarce. The vegetation consists of scattered trees and shrubs with deep roots to reach groundwater. Leaves are often modified into spines to prevent water loss and protect against herbivores. These forests are present in the north-western parts of India and certain rain-shadow areas of the southern peninsular plateau.

29. (A) Both A and R are true and R is the correct explanation of A.
The Western Ghats receive heavy orographic rainfall during the southwest monsoon, which supports dense tropical evergreen forests. This abundant moisture and varied topography create numerous ecological niches, resulting in exceptionally high levels of species richness and endemism. Consequently, the Western Ghats are much more biodiverse than the Eastern Ghats, which receive significantly less rainfall and have fragmented vegetation.

30. (A) P-IV, Q-III, R-II, S-I
Mangrove ecosystems are distributed across India's coastal states. Bhitarkanika is a major site in Odisha, while Coringa is located in Andhra Pradesh. Pichavaram represents a significant mangrove forest in Tamil Nadu, characterized by its extensive root networks. Vembanad is an important coastal wetland system in Kerala. These sites are vital for coastal protection and support rich marine biodiversity.

31. (B) Stilt roots and vivipary - Mangrove Forests
Plants in tidal environments have developed unique survival mechanisms. Mangroves exhibit stilt roots that provide stability in soft, shifting mud and protect against wave action. They also demonstrate vivipary, where seeds germinate while still attached to the parent tree. This adaptation ensures that seedlings are well-developed and capable of establishing themselves quickly once they drop into the saline water.

32. (A) II, IV, I, III
Himalayan vegetation shows a clear altitudinal zonation. Tropical deciduous forests are found at the lowest foothills. Moving higher, these give way to wet temperate broadleaf forests. Above these, coniferous temperate forests like pine and deodar dominate the landscape. Finally, at the highest altitudes before the snowline, alpine meadows and stunted shrubs become the primary form of natural vegetation.

33. (D) Tropical Dry Deciduous Forests
Dry deciduous forests are the most extensive forest type in central India, covering vast areas of Madhya Pradesh and Chhattisgarh. These forests are vital for the livelihoods of local tribal populations, who depend on the collection and sale of minor forest produce. During the dry season, trees shed their leaves, allowing sunlight to facilitate the growth of various seasonal plants.

34. (A) The southern montane forests, unlike Himalayan forests, completely lack coniferous tree species like pine and deodar.
Montane forests in southern India, such as those in the Western Ghats, have different species compositions compared to the Himalayas. While the Himalayas are famous for coniferous trees like pine and deodar, these specific species are naturally absent from the southern montane landscapes. Instead, southern high-altitude forests consist of evergreen species adapted to the unique microclimates of the peninsular ranges.

35. (A) I, II, III and IV
Shola forests are stunted tropical evergreen patches found in the high-altitude valleys of the Western Ghats, including the Nilgiris and Anamalais. They are separated by vast rolling grasslands and harbor many species found nowhere else. These forests are highly sensitive to fire and environmental changes. While they are resilient in their specific niches, fire usually destroys rather than regenerates them.

36. (B) They are highly sensitive to soil salinity and cannot survive in brackish water.
Mangrove forests are highly specialized ecosystems that thrive in brackish water and saline soils. They are not sensitive to salinity; instead, they have evolved various salt-exclusion and salt-secretion mechanisms to survive in

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I. Connects Nilgiri Biosphere to Sathyamangalam/Eastern Ghats
II. Facilitates movement within the Nilgiri-Eastern Ghats landscape near Mettupalayam
III. Connects southern elephant populations between Tamil Nadu and Kerala
IV. Critical connection within the Agasthyamalai Biosphere Reserve
(A) P-I, Q-II, R-III, S-IV
(B) P-II, Q-I, R-IV, S-III
(C) P-I, Q-IV, R-II, S-III
(D) P-III, Q-II, R-I, S-IV
(E) Answer not known

131. Which of the following pairs concerning marine species found in Tamil Nadu's coastal ecosystems and their conservation status is incorrectly matched?
(A) Dugong (Sea Cow) - Vulnerable (IUCN) / Protected under Schedule I of the Wildlife Protection Act.
(B) Great White Shark - Farmed commercially in Gulf of Mannar under state subsidies.
(C) Olive Ridley Turtle - Nests along TN coast, protected under Schedule I of the Wildlife Act.
(D) Green Sea Turtle - Commonly feeds on various seagrasses in the Gulf of Mannar region.
(E) Answer not known

132. Consider the following structural zones of a Biosphere Reserve:
I. Buffer Zone
II. Transition (Manipulation) Zone
III. Core Zone
Which of the following represents the correct sequence from the innermost highly protected area to the outermost area?
(A) III, I, II
(B) I, II, III
(C) III, II, I
(D) II, I, III
(E) Answer not known

133. Guindy National Park in Chennai is renowned for being a critical conservation site for which of the following free-ranging urban wildlife species?
(A) Blackbuck
(B) Royal Bengal Tiger
(C) Snow Leopard
(D) One-horned Rhinoceros
(E) Answer not known

134. Identify the correct statement regarding the Lion-tailed Macaque.
(A) It is primarily found in the dry thorn forests of the Deccan plateau in central India.
(B) Its population is thriving and it has recently been removed from the endangered list.
(C) It is an endemic primate relying on tropical wet evergreen forest canopies in the Western Ghats.
(D) It is an invasive species introduced to Tamil Nadu from various regions of Southeast Asia.
(E) Answer not known

135. Consider the following characteristics of the Gulf of Mannar Marine National Park:
I. It is the first Marine Biosphere Reserve in South and South-East Asia.
II. It consists of a chain of 21 islands spanning from Rameswaram to Tuticorin.
III. It harbors globally significant coral reefs, seagrass beds, and mangroves.
IV. Commercial mechanized trawling is strictly prohibited within the core park limits.
V. It was primarily established to protect the endemic fresh-water river dolphins.
Which of the given statements are correct?
(A) I, II, III and IV
(B) II, III, IV and V
(C) I, III and V
(D) I, II and IV
(E) Answer not known

136. Identify the incorrect statement concerning the conservation of the Nilgiri Tahr in Tamil Nadu.
(A) It is the state animal of Tamil Nadu.
(B) Mukurthi National Park was primarily created to protect its keystone species, the Nilgiri Tahr.
(C) The Nilgiri Tahr is equally adapted to the hot, arid, sandy deserts of Rajasthan.
(D) Project Nilgiri Tahr was recently launched by the Tamil Nadu government to study and protect the species.
(E) Answer not known

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landscape. These ecosystems are primarily located in the northern plains and the vast central peninsula, where annual rainfall ranges between seventy and one hundred centimeters. During the dry season, trees in these regions shed their leaves completely to minimize water loss and survive the heat.

10. (A) P-IV, Q-III, R-II, S-I
Different forest types are primarily distinguished by the amount of annual rainfall they receive. Wet evergreen forests occur in areas with over two hundred centimeters of rain. Moist deciduous types require between one hundred and two hundred centimeters, while dry deciduous forests thrive with seventy to one hundred centimeters. Thorn forests are found in regions receiving less than fifty centimeters.

11. (A) Alpine Forests - Aravalli Range of Rajasthan
Alpine forests are characteristic of high-altitude regions where the climate is cold and the growing season is short. These ecosystems are found in the Himalayan ranges rather than the older, lower-altitude mountains of the Aravallis. In contrast, evergreen forests dominate the Western Ghats' wet slopes, while mangroves are found in tidal regions and eastern coastal deltas.

12. (A) III, I, IV, II
Canopy density classifications categorize forest quality based on the percentage of ground covered by tree crowns. Very dense forests exceed seventy percent density, followed by moderately dense forests ranging from forty to seventy percent. Open forests have ten to forty percent density, while scrub areas consist of degraded land with canopy cover measuring less than ten percent.

13. (D) 66 percent
The National Forest Policy emphasizes the importance of preserving vegetation in sensitive ecological zones. For hilly and mountainous areas, it recommends that sixty-six percent of the total geographical area should be maintained under forest cover. This higher target is essential to prevent soil erosion, manage water runoff, and preserve the fragile biodiversity unique to high-altitude ecosystems.

14. (D) Tree patches outside recorded forest areas that are less than 1 hectare in size are assessed as tree cover.
Tree cover assessment includes small, scattered patches of trees that do not meet the criteria for forest cover. These are typically smaller than one hectare and are often located outside the officially recorded forest boundaries. This metric is crucial for understanding the total green resource available across urban landscapes, agricultural fields, and other non-forest land-use areas.

15. (C) I, III and IV
Wet evergreen forests are located in the Western Ghats and island territories where rainfall is abundant. These ecosystems feature a complex multi-layered structure with a very dense canopy that stays green throughout the year. Important species like mahogany, ebony, and rosewood are common. Unlike deciduous trees, these species do not have a synchronized period for shedding leaves.

16. (C) They cannot be owned by private individuals or corporate bodies.
Unclassed forests represent a residual category of forested lands that are not officially designated as reserved or protected. These areas often consist of unoccupied wastes or inaccessible tracts of vegetation. Crucially, this classification includes lands that can be under the legal ownership of private individuals, corporate bodies, or local communities, rather than being strictly state-owned territory.

17. (D) They have an extremely dense undergrowth of cane and bamboo year-round.
Dry deciduous forests are characterized by trees that shed their foliage during the dry months to conserve moisture. These forests contain species like tendu and palas and transition between moist and arid zones. However, they do not possess the extremely dense, year-round undergrowth of cane or bamboo, which is a feature typically associated with wetter forest environments.

18. (A) Act as sponges to retain rainwater and form sources for perennial streams.
The Shola forests of the Nilgiris are high-altitude evergreen patches that perform vital hydrological functions. They act as natural sponges, absorbing and retaining monsoon rainwater within the soil.

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ANSWERS

1. (A) I and III
Forests provide critical ecological services by regulating the global climate through carbon sequestration. During photosynthesis, trees absorb carbon dioxide, acting as significant sinks that mitigate the greenhouse effect. Furthermore, their extensive root systems stabilize the ground by binding soil particles together, which effectively minimizes erosion and prevents land degradation during periods of heavy rainfall.

2. (A) Both A and R are true and R is the correct explanation of A.
National guidelines suggest maintaining one-third of a country's area as forest to ensure ecological stability. However, India has faced challenges in meeting this target due to intensive land-use changes. Expanding cities, industrial infrastructure projects, and the conversion of forested regions into agricultural land for food security have collectively hindered the rapid expansion of dense vegetation cover.

3. (A) P-II, Q-IV, R-I, S-III
Forests are legally categorized based on the level of protection and community rights. In reserved areas, activities like grazing or hunting are strictly prohibited unless authorized. Protected areas allow some local rights unless specifically barred. Unclassed forests include miscellaneous lands often owned by the state or individuals, while village forests are managed sustainably by local communities.

4. (B) Unclassed Forests - Include wastelands owned by the government or private persons.
Unclassed forests comprise a category that includes wastelands and various tracts not classified as reserved or protected. These areas may be under the ownership of the government or held by private individuals. Unlike reserved forests, they lack a rigid management framework and systematic protection status, making them distinct from the more strictly regulated categories of state-controlled timberlands.

5. (A) Madhya Pradesh > Arunachal Pradesh > Chhattisgarh > Odisha
The distribution of forest area varies significantly across India due to diverse topography and climate. Madhya Pradesh holds the largest area of forest cover in the country, followed by Arunachal Pradesh. Chhattisgarh and Odisha also possess extensive forested regions, though their total areas are slightly less than those found in the top two states mentioned previously.

6. (C) Lands with over 10% canopy density spanning more than 1 hectare, regardless of use.
According to the Forest Survey of India, forest cover is determined through satellite data based on specific criteria. It includes all land parcels that span at least one hectare and maintain a tree canopy density of ten percent or more. This classification is independent of the legal status, land ownership, or the specific use of the land.

7. (B) Biennially (Every two years)
The assessment of India's forest and tree resources is a regular administrative task conducted to track environmental changes. This comprehensive monitoring process is carried out every two years, resulting in a biennial report. This periodic publication helps policymakers evaluate the effectiveness of conservation strategies and understand the current state of the nation's greenery and biodiversity.

8. (B) I, II and IV
India's diverse climate supports various forest types adapted to rainfall and terrain. Evergreen forests thrive in high rainfall zones, while deciduous varieties, known as monsoon forests, shed leaves seasonally. Thorn forests exist in arid regions with adaptations like deep roots. However, montane forests are not exclusive to the Himalayas, as they also appear in the southern peninsular ranges.

9. (A) Both A and R are true and R is the correct explanation of A.
Dry deciduous forests represent the most widespread vegetation type across the Indian

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137. Which of the following is NOT typically a function or initiative of the Tamil Nadu Forest Department?
(A) Execution of Joint Forest Management (JFM) programs through Village Forest Councils.
(B) Issuance of licenses for large-scale, unregulated commercial logging in Reserved Forests.
(C) Implementation of the Tamil Nadu Biodiversity Conservation and Greening Project.
(D) Mitigation of human-wildlife conflict through trenches, solar fences, and compensation mechanisms.
(E) Answer not known

138. What is the primary ecological significance of the Sathyamangalam Tiger Reserve beyond harboring a healthy tiger population?
(A) It contains the highest altitude alpine meadows found in the peninsular India region.
(B) It is the only place in India where African cheetahs have been introduced for study.
(C) It is a completely man-made forest created entirely under the various social forestry schemes.
(D) It acts as a geographical and genetic bridge linking the Western and Eastern Ghats.
(E) Answer not known

139. To manage the threat of invasive alien species like Lantana camara and Prosopis juliflora in the forests of Tamil Nadu, which of the following approaches is ecologically applied?
(A) Mechanical uprooting followed by eco-restoration using native grass and tree species.
(B) Spraying highly toxic chemical herbicides uniformly across all national park territories.
(C) Introducing foreign insect species with no prior study to consume the invasive plant life.
(D) Burning down the entire forest canopy systematically every year to clear the landscape.
(E) Answer not known

140. Which of the following best represents the administrative hierarchy of the Tamil Nadu Forest Department, moving from the highest state-level authority down to the field level?
(A) Principal Chief Conservator of Forests → Chief Conservator of Forests → District Forest Officer → Forest Range Officer
(B) District Forest Officer → Chief Conservator of Forests → Principal Chief Conservator of Forests → Forest Range Officer
(C) Forest Range Officer → District Forest Officer → Chief Conservator of Forests → Principal Chief Conservator of Forests
(D) Principal Chief Conservator of Forests → Forest Range Officer → District Forest Officer → Chief Conservator of Forests
(E) Answer not known

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This stored water is gradually released, feeding numerous perennial streams that sustain local biodiversity and provide a steady water supply to downstream human populations and agricultural activities throughout the year.

19. (B) Acacia and Babool
Arid regions with low annual rainfall and long dry periods require drought-resistant tree species for successful afforestation. Acacia and babool are highly adapted to these conditions, featuring deep root systems and modified leaves that minimize transpiration. These hardy species can survive in sandy or saline soils where most other commercial timber trees would fail to grow effectively.

20. (B) Littoral and Swamp Forests
Coastal and deltaic ecosystems are home to specialized vegetation adapted to fluctuating water levels and salinity. Littoral and swamp forests thrive in marshy areas, estuaries, and mudflats where tidal influences are prominent. These forests protect the shoreline from erosion and serve as unique habitats for diverse aquatic and terrestrial species that are adapted to brackish water environments.

21. (A) I and II
Moist deciduous forests are common in regions with moderate rainfall, typically between one hundred and two hundred centimeters. Teak is the most significant commercial species found in these areas. While the canopy can be dense during the monsoon, it is not so impenetrable that it completely prevents sunlight from reaching the ground or stops the growth of underbrush.

22. (A) Both A and R are true and R is the correct explanation of A.
Mangroves are adapted to survive in oxygen-poor, waterlogged soils found in tidal areas. They develop specialized aerial roots called pneumatophores that grow vertically upwards from the mud. These structures contain small pores that allow the plant to absorb atmospheric oxygen, ensuring survival in anaerobic conditions where traditional underground root systems would be unable to respire properly.

23. (A) P-IV, Q-III, R-II, S-I
Indian tree species are distributed according to specific climatic zones. Sundari is a characteristic mangrove tree found in coastal deltas. Pine trees dominate temperate montane forests at higher altitudes. Sandalwood is commonly found in tropical deciduous forests, particularly in southern India. Ebony is a valuable hardwood tree that thrives in the dense canopies of tropical wet evergreen forests.

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24. (C) Sub-alpine Zone (Above 3000m) - Dominated by tall, broad-leaved evergreen trees with exceptionally dense canopies.
Vegetation in the Himalayas changes with altitude, forming distinct zones. The sub-alpine zone, located above three thousand meters, typically consists of stunted trees and shrubs rather than tall, dense evergreen forests. Lower elevations feature deciduous and temperate broad-leaved species, while the intermediate temperate zone is characterized by various coniferous trees like deodar, pine, and silver fir.

25. (A) Tropical Dry Deciduous > Tropical Moist Deciduous > Tropical Wet Evergreen
The extent of forest types in India is determined by rainfall distribution. Tropical dry deciduous forests cover the largest portion of the country's geographical area. These are followed by tropical moist deciduous forests. Tropical wet evergreen forests, which require the highest rainfall, occupy a much smaller and more restricted area compared to the widespread deciduous varieties found across the peninsula.

26. (D) Biological goods other than timber, such as fruits, honey, and medicinal plants.
Non-timber forest products include a wide variety of biological resources harvested from forests that are not derived from wood. Common examples include wild fruits, honey, medicinal herbs, resins, and fibers. These goods are essential for the livelihoods of many forest-dwelling communities and contribute significantly to the local economy without requiring the large-scale felling of trees for timber.

27. (A) Sundari
The Sundarbans delta is the world's largest mangrove ecosystem, located in the coastal regions of West Bengal and Bangladesh. It is

124. Which of the following pairs of endemic species and their primary stronghold in Tamil Nadu is correctly matched?
(A) Lion-tailed Macaque - Tropical dry deciduous forests found in the Eastern Ghats region.
(B) Grizzled Giant Squirrel - Mangrove swamps and tidal creeks of the Pichavaram delta.
(C) Nilgiri Tahr - High-altitude montane grasslands of the Nilgiris and Anamalais.
(D) Dugong - Shola forests and sheltered valleys in the high-altitude Kodaikanal region.
(E) Answer not known

125. Consider the following Tiger Reserves in Tamil Nadu:
I. Mudumalai
II. Sathyamangalam
III. Anamalai
IV. Kalakkad Mundanthurai
Which of the following represents the correct geographical sequence of these reserves when moving from North to South?
(A) I, II, III, IV
(B) II, I, IV, III
(C) I, III, II, IV
(D) III, II, I, IV
(E) Answer not known

126. In wildlife conservation terminology used in Tamil Nadu, what exactly is an 'Elephant Corridor'?
(A) A paved highway built exclusively for tourists to view elephant herds in their habitat.
(B) A concrete tunnel built under mountains specifically for elephant seasonal migration.
(C) A legal boundary marking the edge of a national park where elephant herds are confined.
(D) A strip of land connecting two habitats for elephant movement to reduce conflict.
(E) Answer not known

127. Which of the following animals, endemic to the Western Ghats and heavily protected in sanctuaries like Mukurthi, is recognized as the State Animal of Tamil Nadu?
(A) Lion-tailed Macaque
(B) Nilgiri Tahr
(C) Indian Elephant
(D) Grizzled Giant Squirrel
(E) Answer not known

128. Consider the following statements about the Kalakkad Mundanthurai Tiger Reserve (KMTR):
I. It is situated in the Southern Western Ghats in Tirunelveli and Kanyakumari districts.
II. It is renowned as the "River Sanctuary" because it forms the catchment area for numerous rivers including the Thamirabarani.
III. It contains patches of mid-elevation tropical wet evergreen forests.
IV. It was the very first Tiger Reserve declared in India during the launch of Project Tiger in 1973.
Which of the given statements are correct?
(A) I, II and III
(B) I, III and IV
(C) II, III and IV
(D) I and II
(E) Answer not known

129. The following question consists of two statements, one labeled as Assertion (A) and the other as Reason (R). Examine these two statements carefully and select the correct answer.
Assertion (A): The Sathyamangalam Tiger Reserve represents a remarkable wildlife recovery success story in Tamil Nadu.
Reason (R): Once notorious for illegal activities, rigorous conservation and anti-poaching efforts led to a rapid resurgence in tiger and elephant populations.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

130. Match the following items in List I with their descriptions in List II:
List I: (Elephant Corridors)
P. Moyar Valley Corridor
Q. Kallar Corridor
R. Anamalai-Parambikulam
S. Shencottah Gap
List II: (Landscapes Connected)

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coastal environments. They provide essential services like buffering against storm surges, acting as carbon sinks, and serving as nurseries for many marine species, making them ecologically indispensable.

37. (A) Immediate increase in the groundwater table level
Clearing forests in the Western Ghats leads to several negative environmental outcomes. It destroys habitats, increases conflict between humans and wildlife, and accelerates soil erosion and landslides due to the loss of root stability. However, deforestation does not increase the groundwater table; instead, it typically causes the water table to drop as soil infiltration decreases and surface runoff increases.

38. (C) Initiative under the National Action Plan on Climate Change (NAPCC) to protect and restore India's diminishing forest cover.
The Green India Mission is a significant environmental initiative launched as part of the National Action Plan on Climate Change. It focuses on the protection, restoration, and enhancement of India's forest cover. The mission aims to improve the quality of existing forests and expand green cover to sequester carbon and support the livelihoods of millions of forest-dependent people across India.

39. (D) Creating shelterbelts using drought-resistant thorn and scrub forest species.
Shelterbelts are rows of trees and shrubs planted to protect land from wind erosion and the spread of desertification. In arid border regions, using drought-resistant thorn and scrub species is the most effective strategy. These hardy plants can survive minimal rainfall while acting as physical barriers that stabilize the soil and prevent sand from encroaching upon fertile agricultural lands.

40. (C) Agro-forestry
Agroforestry is a land management system where woody perennials are grown on the same land management units as agricultural crops or animals. This practice enhances biodiversity and improves soil health by utilizing different layers of the ecosystem. It provides farmers with additional income through timber or fruit while simultaneously supporting the ecological sustainability of the farm through improved nutrient cycling.

41. (A) I and II
The 1988 National Forest Policy marked a major shift in India's approach to forestry by prioritizing ecological balance over commercial profits. It recognized that the environmental stability of the nation depends on healthy forests. The policy also emphasized the role of local communities in forest management, leading to the development of Joint Forest Management programs that involve people in conservation efforts.

42. (A) Both A and R are true and R is the correct explanation of A.
The Forest Rights Act of 2006 addresses historical injustices by recognizing the rights of forest-dwelling communities over their traditional lands. It empowers these groups to manage and protect forest resources that they have sustainably used for generations. By granting legal status to community forest rights, the Act ensures that tribal populations have a decisive voice in the conservation and use of forests.

43. (A) P-IV, Q-I, R-II, S-III
Different laws and policies govern India's natural resources. The 1988 Forest Policy focuses on ecological stability, while the 1980 Act regulates the conversion of forest land for development. The 2006 Act recognizes the rights of tribal communities, and the 1972 Act provides the legal framework for protecting wildlife and establishing national parks and sanctuaries to conserve biodiversity and endangered species.

44. (C) Community Forest Rights - Right to protect, regenerate, or manage any community forest resource
The Forest Rights Act provides a legal mechanism for communities to claim authority over their traditional forest resources. These community rights include the power to protect, regenerate, and manage forests for sustainable use. Unlike individual rights which focus on land tenure, community rights emphasize collective stewardship, ensuring that the local Gram Sabha has a significant role in decision-making and resource conservation.

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nurseries for many fish species. By stabilizing the seabed, they help prevent coastal erosion. Furthermore, they are efficient at sequestering carbon, making them important in the fight against climate change. They require clear, unpolluted water to receive enough sunlight.

116. (B) These forests remain lush and green throughout the year, irrespective of the dry season.
Tropical dry deciduous forests in Tamil Nadu are adapted to seasonal rainfall. During the dry season, trees in these forests shed their leaves to conserve water, which is a key survival strategy. These forests often act as a transition zone between wetter and drier areas. Species like sandalwood are found here. Contrary to some beliefs, these forests do not remain green year-round.

117. (A) Ooty (Udhagamandalam)
Mangrove forests are coastal ecosystems found in tidal areas like Pichavaram, Muthupet, and Point Calimere. They thrive in the brackish water of estuaries and deltas. However, Ooty is a high-altitude hill station located in the Western Ghats. Its cool, temperate climate and high elevation are suitable for Shola forests and grasslands, but it is entirely unsuitable for the growth of mangroves.

118. (C) Highly productive ecosystems providing shelter and food for diverse marine organisms.
The coral reefs of the Gulf of Mannar are among the most biodiverse marine ecosystems in India. They provide essential food and shelter for thousands of marine species, including fish, mollusks, and crustaceans. These reefs also protect the coastline from the impact of waves and storms. Their high productivity and ecological complexity make them vital for both conservation and the local fishing economy.

119. (D) Palk Bay
To protect the critically endangered dugong, Tamil Nadu has established India's first dedicated conservation reserve in the Palk Bay region. This area contains the extensive seagrass meadows that dugongs need for food. By creating a protected space in this specific geographical location, the government aims to reduce threats from fishing and habitat loss, ensuring the long-term survival of this rare marine mammal.

120. (C) Situated entirely within the limits of a major metropolitan city.
Guindy National Park is a unique protected area located entirely within the city limits of Chennai. It is one of the few national parks in the world situated in a major metropolitan area. This small but significant forest provides a vital green space for urban wildlife and serves as an important site for environmental education and the conservation of species like blackbuck.

121. (D) I, II and III
The Nilgiri Biosphere Reserve was established in 1986 as India's first biosphere reserve. It covers a vast area across the states of Tamil Nadu, Kerala, and Karnataka. The reserve includes several important protected areas, such as Mudumalai and Mukurthi. Its varied topography and climate support a wide range of ecosystems, from tropical forests to high-altitude grasslands, harboring many endemic species.

122. (A) Both A and R are true and R is the correct explanation of A.
The Anamalai Tiger Reserve is a critical component of the Western Ghats landscape. It provides a vital corridor that connects several other important forest areas, including Parambikulam and the Palani Hills. This connectivity is essential for the movement of large animals like tigers and elephants, allowing for genetic exchange between different populations and ensuring the long-term health and survival of these species.

123. (A) P-II, Q-IV, R-III, S-I
Many tiger reserves in Tamil Nadu are closely associated with major rivers that provide essential water for wildlife. The Thamirabarani flows through the Kalakkad Mundanthurai reserve, while the Bhavani is linked to Sathyamangalam. The Amaravathi is an important river for the Anamalai reserve, and the Moyar flows through Mudumalai. These rivers are vital for maintaining the lush ecosystems within these protected areas.

124. (C) Nilgiri Tahr - High-altitude montane grasslands of the Nilgiris and Anamalais.
The Nilgiri Tahr is a specialized mountain goat endemic to the Western Ghats. Its primary habitat consists of the high-altitude montane grasslands and rocky cliffs found in areas like the Nilgiris and Anamalais. These animals are well-

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the country's total forest cover and quality are maintained.

54. (C) Deforestation causes fragmentation of wildlife habitats and intensifies human-wildlife conflicts.
Deforestation has profound negative impacts on terrestrial ecosystems. One of the most significant consequences is the fragmentation of wildlife habitats, which isolates animal populations and reduces their genetic diversity. As natural food sources dwindle and habitats shrink, wild animals are frequently forced into human settlements, leading to an increase in dangerous and often fatal human-wildlife conflicts in many regions.

55. (A) I, II, III and V
The Green India Mission aims to tackle climate change by enhancing the quality and quantity of India's forests. It focuses on improving ecosystem services, including carbon sequestration and biodiversity conservation. The mission also strives to improve the livelihoods of people who depend on forest resources. It covers diverse landscapes, including inland forests and coastal mangroves, to ensure a comprehensive ecological restoration.

56. (C) It grants forest dwellers the absolute right to hunt wild animals for commercial trade.
The Forest Rights Act recognizes the deep connection between forest-dwelling communities and their environment. While it grants rights to land and minor forest produce, it does not allow the hunting of wild animals. Hunting remains strictly prohibited under the Wildlife Protection Act. The Gram Sabha plays a central role in identifying who has rights, ensuring that the process remains community-led and transparent.

57. (B) Encouraging the use of wood and timber as the primary fuel source for heavy industries to reduce fossil fuel dependence.
The 1988 National Forest Policy focuses on maintaining environmental stability and ecological balance through forest protection. It aims to increase green cover and meet the basic needs of rural and tribal populations for fuelwood and fodder. However, encouraging industries to use wood as their primary fuel is not an objective; instead, the policy aims to reduce industrial pressure on forests.

58. (D) Using Joint Forest Management to share benefits and responsibilities with local communities.
Joint Forest Management is a successful strategy for restoring degraded forest lands by involving local communities. Under this approach, the forest department and local villagers work together to protect and manage forest resources. The benefits, such as timber and non-timber forest products, are shared between the government and the community, creating a strong incentive for long-term conservation and sustainable land-use.

59. (A) The Forest Rights Act of 2006, which recognizes tribal and traditional forest dweller rights.
The 2006 Forest Rights Act provides legal protection for the traditional practices of tribal people and other forest dwellers. This includes the right to collect, use, and dispose of minor forest produce from both reserved and protected forests, including those within sanctuaries. This legislation ensures that these communities can maintain their livelihoods and cultural heritage while participating in the management of forests.

60. (C) Montane Sub-tropical and Temperate Forests
The Shola forests of Tamil Nadu are unique montane ecosystems characterized by stunted evergreen trees growing in sheltered valleys. Due to their high-altitude location and temperate-like climate, they are classified under the broader category of montane sub-tropical and temperate forests. These forests are vital for water conservation and harbor a high degree of endemic species found nowhere else in the world.

61. (A) I and II
The Western Ghats are a global biodiversity hotspot extending through six Indian states. They are renowned for high levels of endemism, with many plants and animals found only in this mountain range. Despite their importance, these ecosystems face significant threats from human activities, including habitat fragmentation and climate change, requiring constant conservation efforts to protect their unique and fragile biological heritage.

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like large-scale commercial mining and stone quarrying are strictly prohibited. These regulations are designed to prevent industrial pollution and habitat degradation near national parks. Meanwhile, traditional activities such as small-scale farming by local communities are generally allowed to continue under certain guidelines.

80. (C) Critically Endangered
The gharial is a unique crocodilian species with a long, thin snout, found primarily in the rivers of northern India. Due to a massive decline in its population caused by habitat loss and fishing, it is classified as Critically Endangered on the IUCN Red List. The Chambal River remains its most important stronghold, where conservation efforts focus on protecting its nesting sites.

81. (D) I, II and III
The Crocodile Conservation Project was a successful initiative started in 1975 with international support. It aimed to save India's three crocodilian species from extinction. The project used a "rear and release" method, where eggs were collected from the wild, hatched in captivity, and the young were released once they were large enough to survive. This program significantly increased their wild populations.

82. (A) Both A and R are true and R is the correct explanation of A.
The National Chambal Sanctuary is the most vital habitat for the gharial. The river's fast-flowing, clean water and high sandbanks provide the perfect conditions for nesting and basking. Because the Chambal region has remained relatively underdeveloped and unpolluted, it offers a safe refuge for this critically endangered species. Protecting this river ecosystem is essential for the long-term survival of the gharial population.

83. (A) P-I, Q-II, R-III, S-IV
India's national parks protect unique ecosystems and flagship species. Keibul Lamjao is the only floating park in the world, home to the dancing deer. Hemis in Ladakh is a high-altitude sanctuary for snow leopards. Kaziranga is famous for its dense population of one-horned rhinoceroses. Silent Valley in the Western Ghats preserves a pristine tropical evergreen forest with high levels of biodiversity.

84. (B) Gahirmatha Marine Sanctuary - Olive Ridley Sea Turtles
Specific sanctuaries are dedicated to protecting unique wildlife across India. The Gahirmatha Marine Sanctuary in Odisha is the world's most important nesting site for Olive Ridley sea turtles. Every year, thousands of these turtles arrive on its beaches for mass nesting. While other sanctuaries like Chilika protect birds, Gahirmatha's primary focus is the conservation of these endangered marine reptiles and their habitat.

85. (A) I, II, III, IV
The IUCN Red List uses specific categories to indicate the extinction risk of different species. Near Threatened species are close to being at risk. Vulnerable species face a high risk in the medium term. Endangered species face a very high risk of extinction in the near future. Critically Endangered species are at the highest risk, facing an extremely high probability of extinction.

86. (C) A strictly protected area contributing to conservation without human interference.
Biosphere reserves are divided into three zones with different levels of protection. The core zone is the most strictly protected area, dedicated entirely to the conservation of biodiversity and ecosystems. In this zone, human interference is kept to an absolute minimum to allow natural processes to occur without disruption. It serves as a baseline for monitoring the health of the entire reserve.

87. (D) Jim Corbett National Park
Jim Corbett National Park, established in 1936, is India's oldest national park. It was originally named Hailey National Park after the governor of the United Provinces. Located in the foothills of the Himalayas in Uttarakhand, it was the first park to be included in the Project Tiger initiative. It is famous for its diverse wildlife, including tigers, elephants, and many birds.

88. (A) I, III and IV
National parks offer the highest level of legal protection for wildlife, with activities like grazing being strictly prohibited. Wildlife sanctuaries have slightly more flexible rules. Conservation

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These reserves provide essential habitat for tigers and other wildlife.

71. (D) Kameng Elephant Reserve - Kerala
India has numerous reserves dedicated to the conservation of elephants. Notable examples include Singhbhum in Jharkhand, Nilgiri in Tamil Nadu, and Mayurjharna in West Bengal. These reserves are designed to protect elephant habitats and ensure safe movement through migration corridors. However, Kameng Elephant Reserve is located in Arunachal Pradesh, not Kerala, serving as a critical habitat for elephants in northeastern India.

72. (A) II, III, I, IV
Recent tiger estimation reports show that Madhya Pradesh has the highest number of tigers in India. It is followed by Karnataka, which also maintains a very large population. Uttarakhand and Maharashtra are other states with significant tiger numbers. This data helps conservationists understand where protection efforts are most successful and where more resources are needed to ensure the survival of the species.

73. (B) 1992
Project Elephant was launched in 1992 by the Government of India to provide financial and technical support for elephant conservation. The project aims to ensure the long-term survival of elephants in their natural habitats. It focuses on protecting elephants, their migration corridors, and their environment. Additionally, it works to address the issues of human-elephant conflict and improve the welfare of elephants.

74. (D) Early warning systems using sensors and SMS alerts to villagers to reduce fatal encounters.
Mitigating human-elephant conflict is a major challenge in wildlife management. Modern strategies focus on using technology to prevent dangerous encounters. Early warning systems that use sensors to detect elephant movement near villages can send SMS alerts to residents. This allows people to take safety precautions and reduces the likelihood of fatal accidents, promoting a more peaceful coexistence between humans and elephants.

75. (A) I, II, III and V
The Indian elephant is a culturally and ecologically significant animal, recognized as India's National Heritage Animal. It is listed as endangered on the IUCN Red List and receives the highest legal protection under Schedule I of the Wildlife Protection Act. Habitat fragmentation is a major threat to their survival. Notably, only male Indian elephants possess large, visible tusks, unlike their African counterparts.

76. (C) Tourism and minor forest produce collection are strictly banned in the Buffer zone.
Tiger reserves are structured to balance conservation with limited human activity. The core area is kept strictly protected and inviolate for wildlife. The surrounding buffer zone allows for more flexible management, where some sustainable human activities are permitted. These may include regulated tourism and the collection of minor forest produce by local communities, provided these activities do not harm the core conservation goals.

77. (A) Keoladeo National Park
Many protected areas in India serve as tiger reserves, but not all of them have this designation. Pakke, Namdapha, and Pilibhit are all officially recognized tiger reserves. However, Keoladeo National Park in Rajasthan is primarily a world-renowned bird sanctuary and a wetland of international importance. While it is a protected area, it is not part of the national network of tiger reserves.

78. (D) Habitat loss and fragmentation forcing wildlife to venture into human areas for food.
Human-wildlife conflict often arises due to the loss and fragmentation of natural habitats. When forests are cleared or divided by roads and farms, wild animals lose their natural food sources and space. This forces them to enter human settlements and agricultural lands in search of food. This encroachment leads to crop damage and dangerous encounters, creating significant challenges for conservationists and communities.

79. (B) Massive commercial mining and stone quarrying operations.
Eco-Sensitive Zones are established around protected areas to act as shock absorbers. Within these zones, highly destructive activities

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45. (A) Wildlife Protection Act → Forest Conservation Act → National Forest Policy → Forest Rights Act
India's environmental legal framework has evolved over several decades. The process began with the Wildlife Protection Act in 1972 to safeguard endangered species. This was followed by the Forest Conservation Act in 1980 to control deforestation. The National Forest Policy was revised in 1988 to prioritize ecology, and the Forest Rights Act was finally enacted in 2006 to recognize community rights.

46. (D) Management of forests and afforestation on barren lands for environmental and rural development.
Social forestry involves the management and protection of forests as well as the afforestation of barren lands to help in environmental, social, and rural development. It aims at meeting the basic needs of rural populations for fuelwood, fodder, and small timber. By involving people in planting trees on community lands, it reduces pressure on traditional forest areas and improves local ecology.

47. (B) K. M. Munshi
Van Mahotsav is an annual tree-planting festival in India celebrated to raise awareness about the importance of forests. It was started in 1950 by K. M. Munshi, who was the Union Minister for Agriculture and Food at the time. The movement encourages citizens across the country to plant trees and fosters a sense of responsibility toward the environment and conservation.

48. (A) I, II and III
Social forestry includes diverse practices tailored to different land types. Farm forestry involves individual farmers planting trees on their own agricultural land for personal or commercial use. Community forestry focuses on planting trees on public lands for the benefit of the whole village. Extension forestry involves planting along roads and canals to increase the total green cover outside of traditional forests.

49. (A) Both A and R are true and R is the correct explanation of A.
Forests in the Himalayan foothills play a vital role in regulating the flow of water to the plains. When these forests are cleared, the soil loses its capacity to absorb and store rainwater. This results in rapid surface runoff during heavy monsoon rains, which causes river levels to rise quickly, leading to catastrophic floods in the northern plains of India.

50. (A) P-III, Q-IV, R-I, S-II
Forestry encompasses various specialized practices. Silviculture is the scientific study and cultivation of forest crops to ensure healthy growth. Agroforestry integrates trees with agricultural crops on the same land. Urban forestry focuses on planting trees within city limits to improve air quality and aesthetics. Compensatory afforestation involves planting new trees to replace forest areas diverted for industrial or infrastructure projects.

51. (B) Overgrazing - Controlled rotational grazing managed by scientific forest officers
Deforestation is driven by several human activities. Shifting cultivation involves clearing patches of forest for agriculture, while linear intrusions like roads fragment habitats. Mining often requires complete forest clearance to reach minerals. However, overgrazing becomes a cause of deforestation when it is uncontrolled; scientific forest management actually includes regulated grazing to prevent damage to young saplings and ensure forest regeneration.

52. (A) II, III, I, IV
The legal process for diverting forest land for non-forestry purposes is strictly regulated. It begins with a user agency submitting a proposal. If non-forest land is required for compensation, it must be identified early. The agency then deposits funds into the CAMPA account. Finally, the central government provides the necessary approval to proceed with the project while ensuring environmental offsets.

53. (A) To use funds from agencies for afforestation and conservation after forest land diversion.
CAMPA was established to manage funds generated through the compensatory afforestation process. When forest land is used for industrial or developmental projects, the user agencies must pay for the ecological loss. These funds are then used by state governments to carry out afforestation, forest restoration, and wildlife conservation activities, ensuring that

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and community reserves are newer categories that help protect lands outside traditional parks. Community reserves are particularly significant because they involve the voluntary participation of local people in conserving wildlife on their own private or communal lands.

89. (A) Both A and R are true and R is the correct explanation of A.
Community reserves were introduced into India's protected area network to involve local people in conservation. These reserves are established on private or community-owned lands where the owners agree to conserve wildlife. This category allows for legal protection without the government taking over land ownership. It encourages a community-led approach to conservation, ensuring that local traditions and biodiversity are protected together.

90. (A) P-II, Q-I, R-IV, S-III
Biosphere reserves protect large-scale ecosystems across India. Nanda Devi is located in the high Himalayas of Uttarakhand. Nokrek is a critical site in the hills of Meghalaya. Pachmarhi preserves the unique biodiversity of the Satpura Range in Madhya Pradesh, while Similipal is a major reserve in the state of Odisha. These areas are vital for conserving regional flora, fauna, and landscapes.

91. (A) Seshachalam Hills - Included in UNESCO MAB
The UNESCO Man and the Biosphere program provides international recognition for important biosphere reserves. Many of India's reserves, such as Nilgiri, Sundarbans, and the Gulf of Mannar, are included in this global network. However, the Seshachalam Hills in Andhra Pradesh, while recognized as a national biosphere reserve, have not yet been included in the international UNESCO MAB program for conservation.

92. (A) I, II, III, IV
India began designating biosphere reserves in the 1980s. The Nilgiri Biosphere Reserve was the first to be established in 1986. It was followed by Nanda Devi in 1988. In 1989, the Gulf of Mannar and Great Nicobar were added to the list. This chronological sequence shows the growing national commitment to protecting large, representative ecosystems through a comprehensive and systematic zoning approach.

93. (B) 12
India has established a total of eighteen biosphere reserves to protect its diverse natural heritage. Out of these, twelve have received international recognition by being included in the UNESCO Man and the Biosphere world network. This status highlights their global ecological importance and fosters international cooperation in conservation and research, helping to promote sustainable development and biodiversity protection on a larger scale.

94. (D) The Great Indian Bustard's population is threatened by collisions with power lines.
Critically endangered species in India face extreme threats to their survival. The Great Indian Bustard, a large bird found in dry grasslands, is one such species. Its population has declined drastically due to habitat loss and accidental collisions with high-voltage power lines. Targeted conservation efforts are underway to protect its remaining habitats and prevent this iconic bird from becoming extinct in the wild.

95. (A) I, II, III and V
A species is classified as Vulnerable if it faces a high risk of extinction in the wild in the medium-term future. This status is based on criteria like significant population reduction or a restricted geographic range. While it is at a lower risk than Endangered species, it still requires active conservation. Successful protection efforts can help improve its status to Near Threatened.

96. (C) The Indian Tiger was recently moved to the 'Extinct in the Wild' category due to poaching.
The IUCN uses 'Extinct' for species with no living individuals and 'Extinct in the Wild' for those only surviving in captivity. The Asiatic cheetah is considered extinct in India. However, the tiger is not extinct; it is currently classified as Endangered. Conservation programs like Project Tiger have been successful in increasing their numbers, although they still face threats from poaching and habitat loss.

97. (D) Gir National Park
India's biosphere reserves cover diverse ecosystems, from the high-altitude Cold Desert

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62. (A) Both A and R are true and R is the correct explanation of A.
The Indo-Burma region is one of the most biologically diverse hotspots on Earth. Its incredible species richness is due to its location at a biological crossroads. It brings together the diverse flora and fauna of the Indian subcontinent, Indochina, and the Palearctic regions. This convergence of different evolutionary lineages results in a unique ecosystem with a high number of endemic species.

63. (A) P-II, Q-IV, R-III, S-I
India is home to several iconic and endangered species, each with a specific natural habitat. The Asiatic lion is found only in the Gir Forest of Gujarat. The one-horned rhinoceros is concentrated in Kaziranga, Assam. Snow leopards inhabit the high-altitude Trans-Himalayas, while the lion-tailed macaque is an endemic primate found in the evergreen forests of the Western Ghats mountain range.

64. (C) Gharial - Crocodile Conservation Project
Species-specific conservation projects have been launched in India to protect endangered animals. The Crocodile Conservation Project was established to save the three species of crocodilians found in India, including the gharial. These initiatives focus on habitat protection, captive breeding, and public awareness. Such targeted efforts are essential for preventing the extinction of species that face unique threats in their natural environments.

65. (A) Project Tiger → Crocodile Conservation Project → Project Elephant → Project Snow Leopard
India has a long history of wildlife conservation initiatives. Project Tiger was the first major species-focused program, launched in 1973. It was followed by the Crocodile Conservation Project in 1975. Later, Project Elephant was introduced in 1992 to protect these large mammals and their corridors. More recently, Project Snow Leopard was started in 2009 to conserve this elusive predator in the Himalayas.

66. (A) A species naturally occurring in a specific, limited geographical area and nowhere else.
Endemism refers to the ecological state of a species being unique to a defined geographic location. This means the species is found naturally only in that specific area, such as an island, a mountain range, or a particular forest type, and nowhere else in the wild. Protecting endemic species is a high conservation priority because they are highly vulnerable to local extinction.

67. (A) 1972
The Wildlife Protection Act of 1972 is the cornerstone of wildlife conservation legislation in India. It provides the legal framework for protecting wild animals, birds, and plants. The Act established different schedules of protection, with Schedule I providing the highest level of security. It also empowered the government to declare national parks and sanctuaries to safeguard the country's diverse and endangered biodiversity.

68. (A) I, II and III
Project Tiger is a major conservation program launched in 1973 to ensure a viable population of tigers in their natural habitats. It is a centrally sponsored scheme that provides funding and technical support to tiger range states. The National Tiger Conservation Authority oversees the project, focusing on habitat management and anti-poaching efforts. The goal is to protect tigers within functioning ecosystems.

69. (A) Both A and R are true and R is the correct explanation of A.
Tiger populations in India have shown a positive trend due to intensive conservation efforts. Scientific management practices, such as the use of advanced monitoring technology and better anti-poaching measures, have been effective. The expansion of the Tiger Reserve network and the focus on habitat connectivity have allowed tiger numbers to grow. These successes demonstrate the impact of committed, large-scale wildlife management programs.

70. (A) P-IV, Q-II, R-III, S-I
Tiger reserves are spread across various states to protect the species in different ecosystems. Bandipur is a famous reserve in Karnataka, while Ranthambore is located in the semi-arid landscape of Rajasthan. Periyar is a significant reserve in the Western Ghats of Kerala, and Kanha is a renowned park in Madhya Pradesh.

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These evergreen patches are sheltered from the strong winds and frost that affect the surrounding open grasslands. The high moisture levels in these valleys support the growth of specialized trees and plants. This delicate balance between the forest and grassland is essential for the region's hydrology.

107. (A) Vellar and Coleroon (Kollidam)
The Pichavaram mangrove forest is one of the largest in India, located in a strategic coastal position. It is situated between the estuaries of the Vellar and Coleroon rivers. These rivers provide the necessary mix of fresh and saline water that allows the mangrove trees to thrive. The complex network of waterways and islands makes it a vital ecosystem for marine life.

108. (A) I, II and IV
Tropical wet evergreen forests in Tamil Nadu are primarily found in the southern Western Ghats, particularly in Tirunelveli and Kanyakumari. These forests are ecologically connected to the Silent Valley in Kerala. They are characterized by a high diversity of species, including epiphytes like orchids. Cullenia exarillata is a dominant tree species that is a key component of these dense, high-rainfall ecosystems.

109. (A) Both A and R are true and R is the correct explanation of A.
The Shola forests of Tamil Nadu are highly specialized and fragile ecosystems. Because the trees are slow-growing and adapted to very specific conditions, they are easily threatened by environmental changes. Invasive species like wattle and eucalyptus, which grow much faster, can quickly take over the landscape, outcompeting the native Shola species and disrupting the natural balance of these unique montane forests.

110. (A) P-III, Q-I, R-II, S-IV
Tamil Nadu has many specialized sanctuaries for wildlife. Vedanthangal is the state's oldest water bird sanctuary. Srivilliputhur is dedicated to the grizzled giant squirrel. The Gulf of Mannar protects marine life, including the dugong. Mudumalai is a major reserve for large mammals like elephants and tigers. These protected areas are essential for conserving the state's diverse fauna and their unique habitats.

111. (B) Prosopis juliflora (Seemai Karuvelam) - A highly beneficial endemic tree that boosts groundwater
Tamil Nadu's flora includes many significant species. The Kurinji flower is famous for its rare twelve-year blooming cycle. Avicennia marina is a common mangrove tree in coastal areas. Teak is a valuable timber species found in deciduous forests. However, Prosopis juliflora is an invasive species that was introduced to the region; it often has negative impacts on groundwater and native biodiversity.

112. (A) III, I, II, IV
Tamil Nadu's conservation history includes the establishment of many protected areas over several decades. Vedanthangal was officially recognized very early, followed by Mudumalai. Point Calimere was established later in the 1960s to protect coastal wildlife. Sathyamangalam is one of the more recently designated sanctuaries. This timeline shows the state's long-term and continuing commitment to protecting its diverse terrestrial and coastal natural resources.

113. (D) Avicennia marina (Alaiyathi)
The Muthupet mangrove forest, located at the edge of the Cauvery delta, is a unique coastal ecosystem. It is characterized by the overwhelming dominance of Avicennia marina, locally known as Alaiyathi. This species is highly salt-tolerant and well-adapted to the conditions of the southern delta. These mangroves provide a vital barrier against coastal erosion and support a variety of fish and birds.

114. (A) They are extensively found in the Gulf of Mannar and Palk Bay regions.
Seagrass meadows are highly productive marine ecosystems found in the shallow coastal waters of Tamil Nadu. They are particularly extensive in the Gulf of Mannar and Palk Bay. Unlike algae, seagrasses are true flowering plants with roots and seeds. These underwater meadows provide essential food and habitat for many marine animals and play a significant role in maintaining the health of the sea.

115. (A) I, II, III and IV
Seagrass meadows in the Gulf of Mannar are ecologically indispensable. They are the primary food for the endangered dugong and act as

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to the tropical Agasthyamalai and Achanakmar-Amarkantak. These areas are managed for conservation, research, and sustainable development. While Gir National Park is a very important protected area for Asiatic lions, it is designated as a national park and wildlife sanctuary, but it is not currently part of the biosphere reserve network.

98. (A) Surrounds the core and is used for activities compatible with ecological practices.
The buffer zone of a biosphere reserve surrounds the core area and serves multiple purposes. It is managed for activities that are compatible with the conservation of the core, such as environmental education, research, and sustainable resource use. This zone helps reduce the impact of human activities on the most sensitive parts of the reserve, promoting a balance between conservation and development.

99. (B) Wildlife (Protection) Act, 1972
The legal process for establishing and managing protected areas in India is governed by the Wildlife Protection Act of 1972. This legislation provides the state government with the authority to declare an area as a wildlife sanctuary or upgrade it to a national park. National parks generally receive a higher level of protection, with more restrictions on human activity and resource extraction.

100. (B) EW means surviving in captivity, EX means zero living individuals globally.
IUCN categories distinguish between different levels of extinction. A species is 'Extinct' when there is no doubt that the last individual has died globally. In contrast, 'Extinct in the Wild' means the species no longer exists in its natural habitat but still survives in controlled environments like zoos or botanical gardens. This distinction is crucial for directing captive breeding and reintroduction efforts.

101. (A) I and III
Tamil Nadu has a significant amount of forest area, accounting for slightly more than twenty percent of its total territory. These forests are not distributed uniformly; instead, they are concentrated in the mountainous regions. The Western Ghats, in particular, represent the most ecologically rich and biodiverse forested areas in the state, containing a wide variety of plants and animals found nowhere else.

102. (A) Both A and R are true and R is the correct explanation of A.
Tamil Nadu's forest cover is below the national target of thirty-three percent. This is largely due to the state's geography, as much of its land lies in the rain shadow of the Western Ghats. These areas receive less rainfall, which naturally limits the growth of dense, continuous forests. Consequently, the drier climate across large parts of the state supports scrub and thorn vegetation.

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103. (A) P-II, Q-III, R-I, S-IV
Tamil Nadu's diverse protected areas are located in various districts. The Pichavaram mangroves are in Cuddalore, while Mudumalai is in the high-altitude Nilgiris. Point Calimere is a coastal sanctuary in Nagapattinam. The Kalakkad Mundanthurai Tiger Reserve is situated in the southern district of Tirunelveli. Each of these sites protects a unique ecosystem, from tidal mangroves to tropical forests and coastal wetlands.

104. (C) Tropical Wet Evergreen Forests - Windward western slopes of Anamalai and Nilgiris.
Different forest types in Tamil Nadu are found in specific climatic zones. Tropical wet evergreen forests are restricted to the western slopes of the Anamalai and Nilgiri hills, where rainfall is very high. In contrast, Shola forests are found in high-altitude valleys, mangroves are located in coastal estuaries, and dry thorn forests are common in the state's arid, low-rainfall inland plains.

105. (C) I, III, II, IV
Forest cover in Tamil Nadu is concentrated in the hilly districts. Erode has a large area of forest, followed by Dindigul and Coimbatore. These districts contain significant portions of the Western and Eastern Ghats. Vellore also has forested regions, though the total area is smaller than in the other three districts. This distribution reflects the importance of mountain ranges in maintaining greenery.

106. (D) Sheltered valleys with high moisture surrounded by frost-susceptible grasslands.
Shola forests thrive in a unique microclimate found in the high-altitude valleys of the Nilgiris.

adapted to the steep terrain and cool climate of the high hills. Protecting these unique grasslands is essential for the survival of this endangered state animal.

125. (A) I, II, III, IV
Moving from north to south, the major tiger reserves in Tamil Nadu are Mudumalai, Sathyamangalam, Anamalai, and Kalakkad Mundanthurai. Mudumalai is the northernmost reserve, located at the junction of three states. Sathyamangalam lies to its east and south. Further south are the Anamalai hills, and the southernmost reserve is Kalakkad Mundanthurai, situated near the tip of the Indian peninsula in Tirunelveli.

126. (D) A strip of land connecting two habitats for elephant movement to reduce conflict.
An elephant corridor is a narrow strip of land that allows elephants to move between two larger habitats. These paths are essential for seasonal migration and for maintaining genetic diversity. In Tamil Nadu, protecting these corridors is a major conservation priority because it helps reduce conflict between humans and elephants by providing the animals with safe, traditional routes through human-dominated landscapes.

127. (B) Nilgiri Tahr
The Nilgiri Tahr is the state animal of Tamil Nadu and is found only in the high-altitude regions of the Western Ghats. It is a flagship species for the conservation of montane grasslands. Sanctuaries like Mukurthi provide critical protection for this endangered animal. Its survival is closely linked to the health of the high-elevation ecosystems, making it a symbol of the region's unique biodiversity.

128. (A) I, II and III
The Kalakkad Mundanthurai Tiger Reserve is an ecologically rich area in the southern Western Ghats. It is known as a "river sanctuary" because it serves as the catchment area for many important rivers. The reserve contains diverse forest types, including rare mid-elevation evergreen forests. While it is a key site for tiger conservation today, it was not among the original reserves.

129. (A) Both A and R are true and R is the correct explanation of A.
Sathyamangalam Tiger Reserve has seen a significant recovery in its wildlife populations due to effective management. Once a region with many challenges, rigorous anti-poaching efforts and habitat protection have led to an increase in tigers and elephants. Its location makes it a vital bridge between the Western and Eastern Ghats, allowing for the movement of animals across a larger landscape.

130. (A) P-I, Q-II, R-III, S-IV
Elephant corridors in Tamil Nadu connect different landscapes, allowing for the movement of herds. The Moyar Valley connects the Nilgiris to the Eastern Ghats. The Kallar corridor is essential for movement near Mettupalayam. Other corridors facilitate connections between populations in the Anamalai hills and the Agasthyamalai region. Protecting these paths is crucial for the long-term survival of elephants in the southern states.

131. (B) Great White Shark - Farmed commercially in Gulf of Mannar under state subsidies.
Tamil Nadu's coastal waters are home to several protected marine species. The dugong and Olive Ridley turtle are highly endangered and receive strict legal protection. Green sea turtles are also common in seagrass meadows. However, great white sharks are not commercially farmed in the Gulf of Mannar. Marine conservation focuses on protecting wild populations and their habitats from pollution and destructive fishing practices.

132. (A) III, I, II
A biosphere reserve is organized into three distinct zones for management. The core zone is the innermost part, kept strictly protected for conservation. It is surrounded by the buffer zone, where research and sustainable activities are allowed. The transition zone is the outermost area where local communities work with management to use the land sustainably for the benefit of both people and nature.

133. (A) Blackbuck
Guindy National Park in Chennai is a critical habitat for the blackbuck, an elegant antelope species native to the Indian subcontinent. The park provides one of the few remaining open

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efficient network of canal and tank irrigation to meet the water requirements of rice.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

23. Which state is historically recognized as the largest producer of wheat in India, heavily benefiting from the Green Revolution?
(A) Madhya Pradesh
(B) Uttar Pradesh
(C) Punjab
(D) Haryana
(E) Answer not known

24. Match the items in List I with those in List II and select the correct option:
List I: (Millets)
P. Sorghum
Q. Pearl Millet
R. Finger Millet
S. Foxtail Millet
List II: (Common Names)
I. Bajra
II. Jowar
III. Kangni
IV. Ragi
(A) P-II, Q-I, R-IV, S-III
(B) P-I, Q-II, R-III, S-IV
(C) P-II, Q-IV, R-I, S-III
(D) P-IV, Q-I, R-II, S-III
(E) Answer not known

25. A farmer in a semi-arid region wants to cultivate a crop that helps restore soil fertility by fixing atmospheric nitrogen, while requiring minimal irrigation. Which of the following is the most appropriate choice?
(A) Wheat
(B) Sugarcane
(C) Rice
(D) Pulses
(E) Answer not known

26. Consider the following statements regarding wheat cultivation in India:
I. It requires a cool growing season.
II. It requires bright sunshine at the time of ripening.
III. It grows best in regions receiving 200 cm of annual rainfall.
IV. Frost during the growing stage is highly beneficial for its yield.
Which of the above statement(s) is/are incorrect?
(A) I, II and III
(B) I, II and IV
(C) III and IV
(D) I and IV
(E) Answer not known

27. Which of the following pairs of crop and its leading producing state is correctly matched?
(A) Jute - Gujarat
(B) Tea - Assam
(C) Rubber - Punjab
(D) Coffee - Uttar Pradesh
(E) Answer not known

28. Which of the following statements correctly explains the significance of the UN declaring 2023 as the International Year of Millets (IYOM)?
(A) To strictly ban the cultivation of water-intensive crops like rice and wheat across all countries globally.
(B) To promote millets as climate-resilient, nutritionally rich crops suitable for sustainable agriculture.
(C) To mandate millets as the only primary staple food provided under the national public distribution system.
(D) To shift the entire global agricultural subsidy exclusively towards the promotion of millet production.
(E) Answer not known

29. Select the correct sequential order of the major growth stages in rice cultivation.
(A) Nursery preparation, Transplanting, Tillering, Panicle initiation
(B) Tillering, Nursery preparation, Transplanting, Panicle initiation
(C) Transplanting, Tillering, Nursery preparation, Panicle initiation
(D) Nursery preparation, Tillering, Transplanting, Panicle initiation
(E) Answer not known

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CHAPTER 06
Agriculture of India

1. Consider the following statements regarding the land use pattern in India:
I. The net sown area accounts for about 46 percent of the total reporting area.
II. Fallow land is left uncultivated for a period of one to five years to regain fertility.
III. Pastures and grazing lands cover more than 30 percent of the total area.
Which of the above statement(s) is/are correct?
(A) I and II
(B) II and III
(C) I and III
(D) III only
(E) Answer not known

2. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option.
Assertion (A): India's agricultural production heavily depends on the timely arrival and spatial distribution of the Southwest Monsoon.
Reason (R): More than 50 percent of the net sown area in India is rainfed and lacks assured irrigation facilities.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

3. Which of the following states in India has the highest percentage of its geographical area under net sown area?
(A) Punjab
(B) Uttar Pradesh
(C) Maharashtra
(D) Madhya Pradesh
(E) Answer not known

4. Match the items in List I with those in List II and select the correct option:
List I: (Types of Farming)
P. Subsistence Farming
Q. Commercial Farming
R. Plantation Agriculture
S. Extensive Farming
List II: (Defining Characteristics)
I. Focus on cash crops using modern inputs
II. Single crop grown over a large estate
III. Large farm size with low yield per hectare
IV. Production primarily for family consumption
(A) P-IV, Q-I, R-II, S-III
(B) P-III, Q-I, R-IV, S-II
(C) P-IV, Q-II, R-I, S-III
(D) P-I, Q-IV, R-II, S-III
(E) Answer not known

5. A farmer in Tamil Nadu cultivates watermelon, muskmelon, and cucumber utilizing the residual moisture in the soil with supplementary irrigation during the short dry months. This cropping pattern is best classified under which season?
(A) Zaid season
(B) Kharif season
(C) Rabi season
(D) Pre-Kharif transition season
(E) Answer not known

6. Consider the following statements regarding the local names of shifting cultivation in India:
I. It is called Jhumming in Assam and Meghalaya.
II. It is known as Ponam in Odisha.
III. It is called Podu in Andhra Pradesh.
IV. It is referred to as Bewar in Tamil Nadu.
Which of the above statement(s) is/are incorrect?
(A) I, II and III
(B) I, II and IV
(C) II and IV
(D) III and IV
(E) Answer not known

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(B) Rice - Above 100 cm
(C) Wheat - 50 to 75 cm
(D) Bajra - 30 to 50 cm
(E) Answer not known

38. The ICAR-Sugarcane Breeding Institute, a premier research institution for sugarcane in India, is located in which city?
(A) Lucknow
(B) Kanpur
(C) Pune
(D) Coimbatore
(E) Answer not known

39. Which of the following statements regarding the nutritional value of millets is incorrect?
(A) They are gluten-free and have a low glycemic index.
(B) They are entirely devoid of essential minerals like calcium and iron.
(C) They contain higher levels of protein and dietary fiber compared to polished white rice.
(D) Finger millet (Ragi) is particularly noted for its high calcium content.
(E) Answer not known

40. Which of the following is NOT typically classified as a food crop?
(A) Turmeric
(B) Groundnut
(C) Jute
(D) Barley
(E) Answer not known

41. Consider the following statements regarding cotton cultivation in India:
I. It requires 210 frost-free days and bright sunshine for its growth.
II. Black cotton soil (Regur) of the Deccan plateau is ideal for its cultivation.
III. It requires heavy rainfall exceeding 200 cm throughout the year.
Which of the above statement(s) is/are correct?
(A) I and II
(B) II and III
(C) I and III
(D) II only
(E) Answer not known

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42. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option.
Assertion (A): The sugar industry in India has shown a tendency to shift and concentrate in the southern and western states like Maharashtra and Tamil Nadu.
Reason (R): The cane produced in these regions has a higher sucrose content and the cooler climate ensures a longer crushing season.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

43. Which Indian state is the leading producer of groundnut, accounting for a significant share of the country's total production?
(A) Rajasthan
(B) Gujarat
(C) Tamil Nadu
(D) Andhra Pradesh
(E) Answer not known

44. Match the items in List I with those in List II and select the correct option:
List I: (Spices)
P. Pepper
Q. Saffron
R. Turmeric
S. Coriander
List II: (Major Producing States)
I. Kerala
II. Jammu & Kashmir
III. Telangana / Maharashtra
IV. Rajasthan / Madhya Pradesh
(A) P-I, Q-II, R-III, S-IV
(B) P-II, Q-I, R-IV, S-III
(C) P-I, Q-III, R-II, S-IV
(D) P-III, Q-II, R-I, S-IV
(E) Answer not known

45. A commercial planter wishes to establish a tea estate. Which of the following topographical features is essential to prevent waterlogging and ensure healthy growth of tea bushes?
(A) Gently sloping hilly terrains with well-drained soils

R. Cucumber
S. Gram (Chickpea)
List II: (Dominant Growing Season)
I. Zaid
II. Rabi
III. Kharif
IV. Winter Zaid
(A) P-II, Q-III, R-I, S-II
(B) P-III, Q-II, R-I, S-IV
(C) P-II, Q-III, R-IV, S-I
(D) P-I, Q-III, R-II, S-IV
(E) Answer not known

15. Which of the following is NOT typically classified as a Kharif crop in India?
(A) Jowar
(B) Bajra
(C) Tur (Arhar)
(D) Mustard
(E) Answer not known

16. Arrange the following stages of shifting cultivation in the correct sequential order:
1. Slashing the vegetation
2. Burning the dried vegetation
3. Selecting a forest patch
4. Sowing seeds in the ashes
(A) 3, 1, 2, 4
(B) 1, 3, 2, 4
(C) 3, 2, 1, 4
(D) 1, 2, 4, 3
(E) Answer not known

17. Which of the following pairs of farming type and its characteristic is incorrectly matched?
(A) Plantation Agriculture - Capital intensive
(B) Dryland Farming - Practiced in regions with rainfall above 150 cm
(C) Mixed Farming - Equal emphasis on crop cultivation and animal husbandry
(D) Commercial Farming - High use of modern inputs and fertilizers
(E) Answer not known

18. The agricultural crop year in India, which is used for official planning and data collection, spans across which of the following periods?
(A) January to December
(B) April to March
(C) October to September
(D) July to June
(E) Answer not known

19. According to recent economic data, agriculture and allied sectors provide employment to approximately what percentage of the total workforce in India?
(A) Around 25 percent
(B) Around 45 percent
(C) Around 65 percent
(D) Around 75 percent
(E) Answer not known

20. Which of the following statements correctly highlights the role of technology in modernizing Indian agriculture?
(A) Modern technology has completely eliminated the necessity for manual labour in all primary farming sectors.
(B) The implementation of digital agriculture is exclusively beneficial for plantation crops in the northeastern states.
(C) High-Yielding Variety (HYV) seeds and mechanized implements have significantly increased per hectare productivity.
(D) Technological interventions have ensured that Indian agriculture is entirely independent of seasonal monsoon rainfall.
(E) Answer not known

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21. Consider the following statements regarding rice cultivation in India:
I. It requires high temperature (above 25°C) and high humidity.
II. It requires annual rainfall strictly below 50 cm.
III. It is grown extensively in flooded fields during the vegetative stage.
Which of the above statement(s) is/are correct?
(A) I and II
(B) II and III
(C) I and III
(D) I only
(E) Answer not known

22. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option.
Assertion (A): Tamil Nadu achieves very high productivity in rice despite receiving less rainfall than West Bengal.
Reason (R): Tamil Nadu relies heavily on an

7. Which of the following pairs of shifting agriculture local names and their respective regions is correctly matched?
(A) Valre - Northeastern India
(B) Kumari - Western Ghats
(C) Khil - Madhya Pradesh
(D) Kuruwa - Rajasthan
(E) Answer not known

8. Which of the following statements correctly describes the Kharif cropping season in India?
(A) The various crops are typically sown in October and harvested in March.
(B) Wheat, barley, and mustard are the major agricultural crops grown in this season.
(C) The crops are highly dependent on the onset of the Southwest monsoon.
(D) It is a short agricultural season occurring between Rabi and the onset of winter.
(E) Answer not known

9. Select the correct chronological sequence of the cropping seasons in India starting from the beginning of the agricultural year.
(A) Rabi, Zaid, Kharif
(B) Zaid, Kharif, Rabi
(C) Kharif, Rabi, Zaid
(D) Kharif, Zaid, Rabi
(E) Answer not known

10. When comparing intensive and extensive subsistence farming, which of the following best highlights the primary difference?
(A) Intensive farming has high yield per hectare, whereas extensive farming has low yield per hectare.
(B) Intensive farming relies solely on machinery, whereas extensive farming relies on manual labour.
(C) Intensive farming is practiced in sparsely populated areas, whereas extensive farming is practiced in highly populated areas.
(D) Intensive farming focuses on cash crops, whereas extensive farming focuses only on plantation crops.
(E) Answer not known

11. Consider the following factors that affect agricultural practices in India:
I. Climatic conditions
II. Soil characteristics
III. Topography and relief
IV. Irrigation availability
V. Urban transport networks
Which of the above factors are the primary geographical factors determining the types of crops grown?
(A) I, II, III and IV
(B) II, III, IV and V
(C) I, III and V
(D) I, II and V
(E) Answer not known

12. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option.
Assertion (A): The share of agriculture in India's Gross Domestic Product (GDP) has been continuously declining over the decades.
Reason (R): The absolute production and value of agricultural output in India have been decreasing year by year.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

13. Which of the following statements regarding the forest cover and agricultural expansion in India is incorrect?
(A) Currently, more than 40 percent of India's total geographical land is classified under dense forest cover.
(B) The National Forest Policy 1988 sets a target of 33 percent of geographical area under forest cover.
(C) Expansion of net sown area has often occurred at the expense of forest land in various historical contexts.
(D) Agroforestry is actively promoted to create a balance between agricultural needs and ecological stability.
(E) Answer not known

14. Match the items in List I with those in List II and select the correct option:
List I: (Crops)
P. Wheat
Q. Paddy

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30. When comparing the geographic requirements of rice and wheat in India, which of the following is true?
(A) Both crops require well-drained loamy soil and relatively cool temperatures throughout the entire year.
(B) Rice cultivation is concentrated in the northwestern plains, whereas wheat dominates the eastern coastal plains.
(C) Rice is primarily a tropical crop requiring standing water, while wheat is a temperate crop sensitive to waterlogging.
(D) Both crops are deep-rooted and highly drought-resistant in their early vegetative stages of growth.
(E) Answer not known

31. Consider the following statements regarding the features of millets:
I. They are hardy crops that can grow in poor soil conditions.
II. They have high nutritional value, rich in iron, calcium, and dietary fibre.
III. They have a very high water footprint compared to rice.
IV. They are highly susceptible to heat and require constant shading.
V. They are primarily cultivated as cash crops for export to European markets.
Which of the above statement(s) is/are incorrect?
(A) I, II, III and IV
(B) II, III, IV and V
(C) III, IV and V
(D) I, II and V
(E) Answer not known

32. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option.
Assertion (A): Pulses are extensively grown as rotation crops in various parts of India.
Reason (R): Being leguminous crops, they help in restoring soil fertility by fixing nitrogen from the air.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

33. Which of the following statements regarding Maize cultivation in India is incorrect?
(A) It is an important food and fodder crop.
(B) It grows best in highly saline coastal soils.
(C) It requires a temperature between 21°C and 27°C.
(D) In states like Bihar, it is grown in the Rabi season as well.
(E) Answer not known

34. Match the items in List I with those in List II and select the correct option:
List I: (Crop Varieties)
P. Sonalika
Q. IR-8
R. Sujata
S. CO-0238
List II: (Crops)
I. Rice
II. Wheat
III. Sugarcane
IV. Cotton
(A) P-II, Q-I, R-IV, S-III
(B) P-I, Q-II, R-III, S-IV
(C) P-II, Q-III, R-I, S-IV
(D) P-IV, Q-I, R-II, S-III
(E) Answer not known

35. Which of the following crops is NOT classified under the category of millets?
(A) Barley
(B) Ragi
(C) Bajra
(D) Jowar
(E) Answer not known

36. Arrange the following states in descending order of their total pulses production in India:
1. Madhya Pradesh
2. Maharashtra
3. Rajasthan
(A) 1, 2, 3
(B) 1, 3, 2
(C) 2, 1, 3
(D) 3, 1, 2
(E) Answer not known

37. Which of the following pairs of crop and its ideal average annual rainfall requirement is incorrectly matched?
(A) Cotton - 210 to 250 cm

forest and grassland areas where these animals can range freely within an urban environment. Protecting this population is a major focus of the park's management, ensuring that this unique wildlife survives in the city.

134. (C) It is an endemic primate relying on tropical wet evergreen forest canopies in the Western Ghats.
The lion-tailed macaque is an endangered primate that is endemic to the tropical wet evergreen forests of the Western Ghats. It lives primarily in the upper canopy, feeding on fruits and seeds. Its survival is completely dependent on the presence of dense, continuous evergreen forests. Because its habitat is fragmented, it is a major priority for conservation efforts in states like Tamil Nadu and Kerala.

135. (A) I, II, III and IV
The Gulf of Mannar Marine National Park was the first marine biosphere reserve in South and Southeast Asia. It consists of twenty-one islands with diverse ecosystems, including coral reefs and seagrass beds. The park is managed to protect marine biodiversity and prevent destructive activities like mechanized trawling within its limits. It is a globally significant site for the conservation of many rare and endangered marine species.

136. (C) The Nilgiri Tahr is equally adapted to the hot, arid, sandy deserts of Rajasthan.
The Nilgiri Tahr is a specialized mountain animal adapted to the cool, high-altitude grasslands of the Western Ghats. It is the state animal of Tamil Nadu and is protected in several national parks. However, it is not adapted to desert environments. Its survival depends on the specific montane climate and terrain of the southern mountains, making it very different from animals that live in arid regions.

137. (B) Issuance of licenses for large-scale, unregulated commercial logging in Reserved Forests.
The Tamil Nadu Forest Department is responsible for a variety of conservation activities. These include working with local communities through Joint Forest Management and implementing projects to increase green cover. They also manage human-wildlife conflict using various tools like fences and compensation. However, the department does not issue licenses for unregulated commercial logging, as their primary focus is the sustainable management and protection of forests.

138. (D) It acts as a geographical and genetic bridge linking the Western and Eastern Ghats.
The Sathyamangalam Tiger Reserve is ecologically important because it serves as a vital corridor between the Western and Eastern Ghats. This geographical bridge allows for the exchange of genetic material between wildlife populations in these two mountain ranges. By connecting these diverse landscapes, the reserve helps maintain the long-term health and resilience of the entire ecosystem in southern India, supporting many different species.

139. (A) Mechanical uprooting followed by eco-restoration using native grass and tree species.
To manage invasive species like Lantana camara, forest managers in Tamil Nadu use a combination of mechanical uprooting and ecological restoration. After the invasive plants are removed, native species are planted to restore the natural balance of the ecosystem. This approach is more sustainable and effective than using chemicals, as it helps the forest recover its original biodiversity and prevents the invasive species from returning.

140. (A) Principal Chief Conservator of Forests → Chief Conservator of Forests → District Forest Officer → Forest Range Officer
The administrative structure of the Tamil Nadu Forest Department ensures effective management from the state level to the field. The Principal Chief Conservator of Forests is the highest authority. Below them are Chief Conservators, followed by District Forest Officers who manage specific regions. Forest Range Officers work at the field level, overseeing the day-to-day operations of protection, conservation, and community engagement in the forest.

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(B) Flat coastal plains with clayey soil
(C) Deep river valleys prone to seasonal flooding
(D) Arid plateaus with high water retention capacity
(E) Answer not known

46. Consider the following statements regarding coffee cultivation in India:
I. Arabica and Robusta are the main varieties grown in India.
II. It requires a hot and dry climate with less than 50 cm of rainfall.
III. It is primarily cultivated in the Nilgiris and the hills of Karnataka and Kerala.
IV. Direct, intense sunlight is highly beneficial for coffee saplings.
Which of the above statement(s) is/are incorrect?
(A) I, II and III
(B) I, II and IV
(C) II and IV
(D) I and IV
(E) Answer not known

47. Which of the following pairs of oilseed and its primary growing season in North India is correctly matched?
(A) Groundnut - Rabi
(B) Mustard - Kharif
(C) Linseed - Kharif
(D) Sesamum - Kharif
(E) Answer not known

48. Which of the following accurately describes the objective of the National Horticulture Mission (NHM)?
(A) To solely promote the export of raw timber and industrial forest produce for international markets.
(B) To provide guaranteed procurement of all major fruit crops under the existing Minimum Support Price.
(C) To promote holistic growth of the horticulture sector including fruits, vegetables, root crops, and flowers.
(D) To restrict the cultivation of indigenous flowers in favor of various exotic commercial varieties.
(E) Answer not known

49. Select the correct sequence of the primary processing stages of black tea.
(A) Plucking, Withering, Rolling, Fermentation, Drying
(B) Plucking, Fermentation, Withering, Drying, Rolling
(C) Withering, Plucking, Rolling, Drying, Fermentation
(D) Plucking, Rolling, Drying, Fermentation, Withering
(E) Answer not known

50. When comparing the growing conditions of tea and coffee in India, which of the following is a prominent difference?
(A) Tea always requires shade trees, while coffee requires direct, intense sunlight at all developmental stages.
(B) Coffee is generally grown at significantly higher altitudes (above 1500m) than tea in South India.
(C) Tea is primarily grown in rich black soil, whereas coffee requires sandy desert soil with low nutrients.
(D) Tea requires evenly distributed rainfall throughout the year, whereas coffee requires a dry spell for bud development.
(E) Answer not known

51. Consider the following statements regarding horticulture in India:
I. India is the second-largest producer of fruits and vegetables in the world.
II. Horticulture accounts for nearly one-third of the agricultural gross value added (GVA).
III. Mango, banana, and citrus account for a major share of fruit production.
IV. The sector provides better remuneration and high employment opportunities.
Which of the above statement(s) is/are correct?
(A) I, II, III and IV
(B) II, III, IV and V
(C) I, III and V
(D) I, II and V
(E) Answer not known

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52. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option.
Assertion (A): Despite being a major producer of oilseeds, India imports a large quantity of edible oil.
Reason (R): The domestic production of

oilseeds is insufficient to meet the demand due to low per-hectare yield and a growing population.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

53. Which of the following statements regarding tobacco cultivation in India is incorrect?
(A) India is the absolute largest producer and exporter of tobacco in the world.
(B) It was introduced in India by the Portuguese.
(C) Virginia tobacco is heavily cultivated in Andhra Pradesh for cigarette manufacturing.
(D) It requires frost-free conditions and a temperature of 16°C to 35°C.
(E) Answer not known

54. Match the items in List I with those in List II and select the correct option:
List I: (Fruits)
P. Apple
Q. Mango
R. Banana
S. Litchi
List II: (Leading Producing States)
I. Uttar Pradesh
II. Jammu & Kashmir
III. Bihar
IV. Andhra Pradesh / Tamil Nadu
(A) P-II, Q-I, R-IV, S-III
(B) P-I, Q-II, R-III, S-IV
(C) P-II, Q-IV, R-I, S-III
(D) P-III, Q-I, R-IV, S-II
(E) Answer not known

55. Which of the following crops is NOT primarily considered a major oilseed crop grown in India?
(A) Soybean
(B) Black Pepper
(C) Sunflower
(D) Castor seed
(E) Answer not known

56. Arrange the following states in descending order of their sugarcane production in India:
1. Uttar Pradesh
2. Maharashtra
3. Karnataka
(A) 1, 2, 3
(B) 2, 1, 3
(C) 1, 3, 2
(D) 3, 2, 1
(E) Answer not known

57. Which of the following pairs of spice and its major producing state is incorrectly matched?
(A) Cardamom - Kerala
(B) Clove - Tamil Nadu
(C) Cumin - Gujarat
(D) Saffron - Assam
(E) Answer not known

58. The Central Coffee Research Institute is located in which of the following regions?
(A) Chikmagalur, Karnataka
(B) Darjeeling, West Bengal
(C) Munnar, Kerala
(D) Coonoor, Tamil Nadu
(E) Answer not known

59. A farmer adopts a system where tall growing crops are planted alongside short growing crops in an alternating pattern to maximize land use and reduce pest incidence. This concept is an example of:
(A) Crop rotation
(B) Intercropping
(C) Shifting cultivation
(D) Monoculture
(E) Answer not known

60. When comparing Arabica and Robusta varieties of coffee grown in India, which of the following statements is most accurate?
(A) Arabica has a much higher caffeine content and is significantly more resistant to common pests than Robusta.
(B) Arabica is grown at higher altitudes and has a milder flavor, while Robusta is grown at lower altitudes and is hardier.
(C) Robusta is known for its superior aroma and flavor and commands a much higher price in the global market.
(D) Robusta accounts for less than 10 percent of India's total annual coffee production across all states.
(E) Answer not known

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61. Consider the following statements regarding the types of irrigation in India:
I. Canal irrigation is a dominant source in the Northern Plains.
II. Tank irrigation is widely practiced in Peninsular India.
III. Well and tube-well irrigation accounts for an insignificant share of India's irrigated area.
Which of the above statement(s) is/are correct?
(A) I and II
(B) II and III
(C) I and III
(D) I only
(E) Answer not known

62. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option.
Assertion (A): Tank irrigation is highly prevalent in the Deccan plateau region, particularly in Tamil Nadu.
Reason (R): The hard rock terrain of the Deccan plateau makes it difficult to dig wells, and natural depressions easily collect rainwater.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

63. Groundwater (wells and tube-wells) constitutes approximately what percentage of the net irrigated area in India?
(A) Less than 20 percent
(B) Around 35 percent
(C) Over 60 percent
(D) Nearly 90 percent
(E) Answer not known

64. Match the items in List I with those in List II and select the correct option:
List I: (Irrigation Projects)
P. Bhakra Nangal
Q. Hirakud
R. Mettur
S. Nagarjuna Sagar
List II: (Rivers)
I. Krishna
II. Kaveri
III. Mahanadi
IV. Sutlej
(A) P-IV, Q-III, R-II, S-I
(B) P-III, Q-IV, R-I, S-II
(C) P-IV, Q-II, R-III, S-I
(D) P-I, Q-III, R-II, S-IV
(E) Answer not known

65. The extensive introduction of canal irrigation in the arid regions of northwestern India has led to which of the following major environmental consequences?
(A) Complete eradication of groundwater depletion
(B) Severe waterlogging and soil salinity
(C) Increase in the fertility of topsoil natively
(D) Rapid expansion of evergreen broadleaf forests
(E) Answer not known

66. Consider the following statements regarding the components of the Green Revolution in India:
I. Introduction of High-Yielding Variety (HYV) seeds.
II. Extensive use of chemical fertilizers and pesticides.
III. Expansion of assured irrigation infrastructure.
IV. Promotion of traditional organic farming methods.
Which of the above statement(s) is/are incorrect?
(A) I, II and III
(B) I, II and IV
(C) III and IV
(D) IV only
(E) Answer not known

67. Which of the following pairs of Agricultural Revolution and its associated product is correctly matched?
(A) Golden Revolution - Horticulture and Honey
(B) Yellow Revolution - Pulses
(C) Silver Revolution - Cotton
(D) Grey Revolution - Leather
(E) Answer not known

68. Which of the following statements best describes the primary focus of the 'Second Green Revolution' (Evergreen Revolution) in India?

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97. Which of the following pairs of institution and its role is incorrectly matched?
(A) CACP - Recommends Minimum Support Price
(B) APMC - Regulates international agricultural exports
(C) FCI - Procures and stores food grains
(D) NAFED - Procures oilseeds and pulses under price support schemes
(E) Answer not known

98. Which High-Level Committee was constituted by the Government of India in 2014 to recommend restructuring of the Food Corporation of India (FCI)?
(A) Swaminathan Committee
(B) Ashok Dalwai Committee
(C) Ramesh Chand Committee
(D) Shanta Kumar Committee
(E) Answer not known

99. Which of the following accurately describes the primary objective of land ceiling legislation in India?
(A) To fix a maximum limit on landholdings and distribute the surplus land to landless agricultural laborers.
(B) To legally restrict and define the minimum amount of land that a farmer must own to cultivate.
(C) To mandate that all available agricultural land be owned and managed by the state government.
(D) To cap the maximum possible yield that a farmer can produce per hectare for specific crops.
(E) Answer not known

100. Which of the following statements highlights an incorrect criticism of the traditional APMC (Agricultural Produce Market Committee) Act?
(A) It led to a significant fragmentation of agricultural markets across different districts.
(B) It created cartelization among traders and prevented fair price discovery for farmers.
(C) It eliminated all middlemen and gave 100% consumer price directly to the farmer.
(D) It imposed multiple market fees and various cesses on the sale of agricultural produce.
(E) Answer not known

101. Consider the following statements regarding the Soil Health Card Scheme:
I. It aims to assess the nutrient status of every farm holding in the country.
II. It helps reduce the indiscriminate use of chemical fertilizers, especially urea.
III. It provides crop-wise recommendations of nutrients and fertilizers.
Which of the above statement(s) is/are correct?
(A) I and II
(B) II and III
(C) I and III
(D) I only
(E) Answer not known

102. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option.
Assertion (A): The Kisan Credit Card (KCC) scheme provides farmers with flexible and timely credit support from the banking system.
Reason (R): KCC can only be utilized for purchasing seeds and fertilizers, strictly excluding post-harvest expenses and consumption needs.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

103. Which Indian state became the first in the country to be declared fully organic in its agricultural practices?
(A) Kerala
(B) Sikkim
(C) Uttarakhand
(D) Meghalaya
(E) Answer not known

104. Match the items in List I with those in List II and select the correct option:
List I: (PMKSY Components)
P. Accelerated Irrigation Benefit Programme (AIBP)
Q. Har Khet Ko Pani
R. Per Drop More Crop
S. Watershed Development
List II: (Focus Areas)

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List II: (States)
I. Kerala
II. Uttarakhand
III. Gujarat
IV. Karnataka
(A) P-III, Q-IV, R-I, S-II
(B) P-IV, Q-III, R-II, S-I
(C) P-III, Q-I, R-IV, S-II
(D) P-II, Q-IV, R-I, S-III
(E) Answer not known

75. Which of the following is NOT classified as a source of surface water irrigation?
(A) Canals
(B) Tube-wells
(C) Tanks
(D) Ponds
(E) Answer not known

76. Arrange the following sources of irrigation in India in descending order based on their percentage share of the net irrigated area:
1. Tube-wells and other wells
2. Canals
3. Tanks
(A) 1, 2, 3
(B) 2, 1, 3
(C) 1, 3, 2
(D) 3, 2, 1
(E) Answer not known

77. Which of the following pairs of Agricultural Revolution and its primary objective is incorrectly matched?
(A) Black Revolution - Coal production
(B) Red Revolution - Meat and Tomato production
(C) Round Revolution - Potato production
(D) Pink Revolution - Onion and Prawn production
(E) Answer not known

78. The headquarters of the National Dairy Development Board (NDDB), instrumental in India's White Revolution, is located in which city?
(A) Karnal
(B) New Delhi
(C) Anand
(D) Pune
(E) Answer not known

79. Who among the following is widely recognized as the Father of the Green Revolution in India?
(A) Dr. Verghese Kurien
(B) C. Subramaniam
(C) Norman Borlaug
(D) Dr. M. S. Swaminathan
(E) Answer not known

80. Which state in India has the highest percentage of its net sown area under irrigation?
(A) Maharashtra
(B) Tamil Nadu
(C) Punjab
(D) Madhya Pradesh
(E) Answer not known

81. Consider the following statements regarding land reforms in India after independence:
I. Abolition of Zamindari and other intermediary tenures was the first major legislative step.
II. Tenancy reforms aimed to regulate rent, provide security of tenure, and confer ownership to tenants.
III. Land reforms strictly encouraged the consolidation of small holdings into large corporate-owned farms.
Which of the above statement(s) is/are correct?
(A) I and II
(B) II and III
(C) I and III
(D) I only
(E) Answer not known

82. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option.
Assertion (A): The implementation of land ceiling laws in India was largely sluggish and evaded in many states.
Reason (R): Loopholes in the legislation allowed landowners to execute benami transfers and partition land among relatives.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

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(E) Answer not known

111. Consider the following objectives of the Pradhan Mantri Krishi Sinchai Yojana (PMKSY):
I. Convergence of investments in irrigation at the field level.
II. Enhance the physical access of water on the farm.
III. Integration of water source, distribution, and its efficient use.
IV. Enhance the adoption of precision irrigation and other water-saving technologies.
Which of the above statement(s) is/are correct?
(A) I, II, III and IV
(B) II, III, IV and V
(C) I, III and V
(D) I, II and V
(E) Answer not known

112. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option.
Assertion (A): Precision agriculture has achieved near 100% adoption among small and marginal farmers in India.
Reason (R): High capital costs, lack of technical knowledge, and small fragmented landholdings act as major barriers to its adoption.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

113. Which of the following statements regarding the Indian Council of Agricultural Research (ICAR) is incorrect?
(A) It is the apex body for coordinating, guiding, and managing research and education in agriculture in India.
(B) It exclusively focuses on crop research and has no mandate over animal husbandry and fisheries.
(C) It functions under the Department of Agricultural Research and Education, Ministry of Agriculture.
(D) It has played a pioneering role in ushering the Green Revolution in India.
(E) Answer not known

114. Match the items in List I with those in List II and select the correct option:
List I: (Research Universities and Institutes)
P. Tamil Nadu Agricultural University
Q. G.B. Pant University of Agriculture
R. Punjab Agricultural University
S. Indian Agricultural Research Institute (IARI)
List II: (States)
I. New Delhi
II. Uttarakhand
III. Punjab
IV. Tamil Nadu
(A) P-IV, Q-II, R-III, S-I
(B) P-IV, Q-III, R-II, S-I
(C) P-I, Q-II, R-III, S-IV
(D) P-II, Q-I, R-IV, S-III
(E) Answer not known

115. Which of the following is NOT a direct benefit or objective of the Soil Health Card Scheme?
(A) Providing direct cash subsidies to farmers based on their land size.
(B) Identifying macro and micro nutrient deficiencies in the soil.
(C) Recommending the appropriate dosage of fertilizers to improve yield.
(D) Promoting balanced nutrient application to maintain soil fertility.
(E) Answer not known

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116. Arrange the following institutional developments in agricultural credit in India in chronological order:
1. Nationalization of 14 major commercial banks
2. Establishment of NABARD
3. Introduction of Kisan Credit Card (KCC) scheme
4. Establishment of the first Regional Rural Bank (RRB)
(A) 1, 4, 2, 3
(B) 1, 2, 4, 3
(C) 4, 1, 3, 2
(D) 1, 4, 3, 2
(E) Answer not known

117. Which of the following pairs of Agricultural Scheme and its launch year is incorrectly matched?
(A) Kisan Credit Card - 2014

the state.
(B) In the Zamindari system, revenue was collected directly from the cultivator, whereas in Ryotwari, it was through intermediaries.
(C) The Zamindari system was predominantly implemented in the Madras Presidency.
(D) Both systems completely abolished the taxation of agricultural land.
(E) Answer not known

91. Consider the following statements regarding the Pradhan Mantri Fasal Bima Yojana (PMFBY):
I. The maximum premium payable by farmers is 2% for all Kharif food and oilseed crops.
II. The maximum premium payable by farmers is 1.5% for all Rabi food and oilseed crops.
III. The maximum premium for annual commercial and horticultural crops is 5%.
IV. It provides coverage for pre-sowing and post-harvest losses.
Which of the above statement(s) is/are correct?
(A) I, II, III and IV
(B) II, III, IV and V
(C) I, III and V
(D) I, II and V
(E) Answer not known

92. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option.
Assertion (A): The National Food Security Act (NFSA) 2013 shifted the approach to food security from a welfare-based approach to a rights-based approach.
Reason (R): The Act legally entitles up to 75% of the rural population and 50% of the urban population to receive subsidized food grains.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

93. Which of the following statements regarding the Essential Commodities Act (ECA) is incorrect?
(A) It strictly prohibits the export of all agricultural commodities produced in India.
(B) It was enacted to ensure the delivery of certain commodities or products, the supply of which if obstructed owing to hoarding or black-marketing would affect the normal life of the people.
(C) The government can impose stock limits on specified items under this Act.
(D) Items like fertilizers, pulses, and edible oils have historically fallen under its purview.
(E) Answer not known

94. Match the items in List I with those in List II and select the correct option:
List I: (Crops)
P. Kharif crops
Q. Rabi crops
R. Annual Commercial crops
S. Annual Horticulture crops
List II: (Farmer's Premium Rate under PMFBY)
I. 1.5%
II. 2.0%
III. 5.0%
IV. 5.0%
(A) P-II, Q-I, R-III, S-IV
(B) P-I, Q-II, R-IV, S-III
(C) P-III, Q-I, R-II, S-IV
(D) P-II, Q-III, R-I, S-IV
(E) Answer not known

95. Which of the following crops is NOT covered under the mandated Minimum Support Price (MSP) regime of the Government of India?
(A) Paddy
(B) Wheat
(C) Copra
(D) Apple
(E) Answer not known

96. Arrange the following agrarian initiatives/acts in chronological order of their introduction:
1. National Food Security Act (NFSA)
2. Essential Commodities Act (ECA)
3. Launch of e-NAM
4. Pradhan Mantri Fasal Bima Yojana (PMFBY)
(A) 2, 1, 3, 4
(B) 2, 1, 4, 3
(C) 1, 2, 3, 4
(D) 2, 3, 1, 4
(E) Answer not known

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Processing Centres (PPC)
(B) Central Processing Centres (CPC)
(C) Export seaports
(D) Terminal urban retail markets
(E) Answer not known

126. Consider the following statements regarding the Food Processing Industry in India:
I. It acts as a vital link connecting agriculture with manufacturing.
II. It helps in reducing post-harvest losses and enhancing shelf life.
III. India currently processes over 80 percent of its total fruit and vegetable production.
IV. High processing levels universally decrease the nutritional value to zero.
Which of the above statement(s) is/are incorrect?
(A) I, II and III
(B) I, II and IV
(C) III and IV
(D) I and IV
(E) Answer not known

127. Which of the following pairs of Indian agricultural export commodity and its major defining characteristic is correctly matched?
(A) Marine Products - Constitutes the lowest share by value in India's agri-exports
(B) Buffalo Meat - Exported mostly to European Union countries
(C) Spices - India is a net importer and does not export any spices
(D) Basmati Rice - Exported primarily to the Middle East and known for its aroma
(E) Answer not known

128. Which of the following accurately describes the role of APEDA (Agricultural and Processed Food Products Export Development Authority)?
(A) It provides direct agricultural credit and insurance to small and marginal farmers across the country.
(B) It regulates the domestic Minimum Support Price of all essential food crops grown in various states.
(C) It promotes the export of scheduled agricultural products like fruits, vegetables, meat, and cereals.
(D) It manages the national buffer stock of food grains on behalf of the Food Corporation of India (FCI).
(E) Answer not known

129. Select the correct sequence of the supply chain stages conceptualized under the Mega Food Park Scheme.
(A) Farm → Central Processing Centre → Primary Processing Centre → Market
(B) Farm → Collection Centre → Primary Processing Centre → Central Processing Centre → Market
(C) Market → Central Processing Centre → Primary Processing Centre → Farm
(D) Collection Centre → Farm → Central Processing Centre → Primary Processing Centre → Market
(E) Answer not known

130. When comparing cooperative credit and commercial bank credit for agriculture in India, which of the following is true?
(A) Cooperative credit institutions only provide long-term loans, while commercial banks only provide short-term crop loans.
(B) Cooperative banks are entirely unregulated and do not fall under any supervision from the Reserve Bank of India.
(C) Commercial banks completely ignore priority sector lending norms for agriculture as established by the government.
(D) Commercial banks account for a larger share of total institutional agricultural credit disbursed compared to cooperative banks today.
(E) Answer not known

131. Consider the following significance of Farmer Producer Organisations (FPOs):
I. They ensure better price realization for farmers through collective bargaining.
II. They facilitate easier access to modern technology and high-quality inputs.
III. They assist in risk mitigation and value addition of the produce.
IV. They reduce transaction costs for both buyers and farmers.
V. They legally prohibit farmers from selling produce in APMC markets.
Which of the above statement(s) is/are correct?
(A) I, II, III and IV
(B) II, III, IV and V
(C) I, III and V

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I. Precision water application devices like drips and sprinklers
II. Ridge area treatment, drainage line treatment, and rainwater harvesting
III. Faster completion of ongoing major and medium irrigation projects
IV. Creation of new water sources through minor irrigation
(A) P-III, Q-IV, R-I, S-II
(B) P-IV, Q-III, R-II, S-I
(C) P-III, Q-I, R-IV, S-II
(D) P-I, Q-IV, R-II, S-III
(E) Answer not known

105. The use of drones for pesticide spraying, IoT sensors for soil moisture monitoring, and satellite imagery for crop health assessment falls under which modern agricultural concept?
(A) Shifting Agriculture
(B) Subsistence Agriculture
(C) Extensive Agriculture
(D) Precision Agriculture
(E) Answer not known

106. Consider the following statements regarding the Paramparagat Krishi Vikas Yojana (PKVY):
I. It promotes traditional organic farming through a cluster approach.
II. It provides financial assistance for organic certification and marketing.
III. It mandates the use of Genetically Modified (GM) seeds in all clusters.
IV. It encourages the use of bio-fertilizers and bio-pesticides.
Which of the above statement(s) is/are incorrect?
(A) I, II and III
(B) I, II and IV
(C) III only
(D) I and IV
(E) Answer not known

107. Which of the following pairs of Agricultural Research Institute and its location is correctly matched?
(A) Central Potato Research Institute - Chennai
(B) Central Rice Research Institute - Cuttack
(C) Indian Institute of Horticultural Research - Kolkata
(D) Central Institute for Cotton Research - Shimla
(E) Answer not known

108. Which of the following correctly highlights a major benefit of Precision Agriculture?
(A) It increases the uniform application of chemicals across the entire field regardless of local variations.
(B) It optimizes inputs like water and fertilizers based on exact spatial requirements, reducing cost and environmental impact.
(C) It relies entirely on traditional knowledge and historical trends without any reliance on digital data.
(D) It is only applicable to rainfed shifting cultivation practiced in the hilly regions of the country.
(E) Answer not known

109. Select the correct sequential steps for a farmer in India to obtain organic certification under the National Programme for Organic Production (NPOP).
(A) Registration with accredited body, Implementation of organic practices, Field inspection by certifier, Issuance of certificate
(B) Implementation of organic practices, Registration with accredited body, Issuance of certificate, Field inspection by certifier
(C) Issuance of certificate, Field inspection by certifier, Registration with accredited body, Implementation of organic practices
(D) Field inspection by certifier, Issuance of certificate, Implementation of organic practices, Registration with accredited body
(E) Answer not known

110. When comparing traditional farming with precision agriculture, which of the following statements is accurate?
(A) Traditional farming uses site-specific data, while precision agriculture applies uniform inputs over the entire field.
(B) Traditional farming requires massive initial capital for sensors, while precision agriculture requires no machinery.
(C) Precision agriculture relies heavily on information technology and spatial data, whereas traditional farming relies on historical experience and generalized practices.
(D) Precision agriculture completely replaces human decision-making with automated robots in all farming operations.

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(A) Maximizing cereal production through the excessive and intensive use of various chemical fertilizers.
(B) Shifting the entire agricultural base from food crops to commercial plantation crops for profit.
(C) Achieving sustainable agricultural growth while ensuring ecological balance and soil health.
(D) Eliminating all forms of private sector participation in agricultural marketing and distribution.
(E) Answer not known

69. Select the correct chronological order of the initiation of the following agricultural revolutions in India.
(A) Green Revolution, White Revolution, Blue Revolution
(B) White Revolution, Green Revolution, Blue Revolution
(C) Blue Revolution, Green Revolution, White Revolution
(D) Green Revolution, Blue Revolution, White Revolution
(E) Answer not known

70. When comparing Phase I (mid-1960s to mid-1970s) and Phase II (mid-1970s to 1980s) of the Green Revolution in India, which of the following is accurate?
(A) Phase I was spread across all Indian states, while Phase II was restricted only to the regions of Punjab and Haryana.
(B) Phase I focused exclusively on organic farming, while Phase II introduced chemical fertilizers and pesticides.
(C) Phase I was entirely funded by private farmers, while Phase II was funded by the World Bank and other donors.
(D) Phase I was restricted primarily to wheat-growing regions, while Phase II saw the introduction of HYV seeds to more crops and regions.
(E) Answer not known

71. Consider the following statements regarding the White Revolution in India:
I. Operation Flood was launched in 1970 to increase milk production.
II. It helped create a national milk grid linking producers with consumers.
III. The National Dairy Development Board (NDDB) spearheaded the program.
IV. Dr. Verghese Kurien is recognized as the father of the White Revolution.
Which of the above statement(s) is/are correct?
(A) I, II, III and IV
(B) II, III, IV and V
(C) I, III and V
(D) I, II and V
(E) Answer not known

NODIA

72. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option.
Assertion (A): Inland fisheries contribute more to the total fish production in India than marine fisheries.
Reason (R): Development of aquaculture, reservoirs, and tanks under the Blue Revolution has exponentially increased inland fish output.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

73. Which of the following is NOT a recognized limitation or negative impact of the Green Revolution in India?
(A) It led to significantly increased regional disparities in agricultural development across India.
(B) It caused severe depletion of the groundwater table in the northwestern states like Punjab.
(C) It increased interpersonal income inequalities among small-scale and large-scale farmers.
(D) It resulted in an absolute decline in the overall food grain production of the country.
(E) Answer not known

74. Match the items in List I with those in List II and select the correct option:
List I: (Dams)
P. Sardar Sarovar
Q. Tungabhadra
R. Idukki
S. Tehri

(B) Pradhan Mantri Fasal Bima Yojana - 2016
(C) Soil Health Card Scheme - 2015
(D) e-NAM - 2016
(E) Answer not known

118. Under the Soil Health Card scheme, the card is typically issued to the farmers indicating the status of the soil with respect to how many parameters?
(A) 6 parameters
(B) 8 parameters
(C) 12 parameters
(D) 16 parameters
(E) Answer not known

119. The Kisan Credit Card (KCC) scheme facility has been extended over the years. Which of the following categories of farmers is currently NOT eligible to avail the KCC?
(A) Tenant farmers and sharecroppers
(B) Large corporate multinational agribusinesses
(C) Farmers engaged in animal husbandry
(D) Farmers engaged in fisheries
(E) Answer not known

120. In organic farming, the practice of using living organisms to suppress pest populations, rather than using synthetic chemical pesticides, is known as:
(A) Bio-magnification
(B) Bio-fortification
(C) Biological pest control
(D) Bio-leaching
(E) Answer not known

121. Consider the following statements regarding NABARD (National Bank for Agriculture and Rural Development):
I. It was established in 1982 on the recommendation of the B. Sivaraman Committee.
II. It is the apex regulatory body for Regional Rural Banks (RRBs) and Cooperative Banks.
III. It directly lends small loans to individual farmers for purchasing seeds.
Which of the above statement(s) is/are correct?
(A) I and II
(B) II and III
(C) I and III
(D) I only
(E) Answer not known

122. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option.
Assertion (A): Farmer Producer Organisations (FPOs) significantly enhance the bargaining power of small and marginal farmers.
Reason (R): FPOs aggregate inputs, credit, and produce, enabling farmers to achieve economies of scale and direct market access.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

123. What is the current limit of Foreign Direct Investment (FDI) permitted under the automatic route in the food processing sector in India?
(A) 49 percent
(B) 74 percent
(C) 100 percent
(D) FDI is strictly prohibited
(E) Answer not known

124. Match the items in List I with those in List II and select the correct option:
List I: (Export Promotion Authorities)
P. APEDA
Q. MPEDA
R. Spices Board
S. Coffee Board
List II: (Mandated Commodities)
I. Marine and seafood products
II. Scheduled agricultural and processed foods
III. Coffee cultivation and export
IV. Cardamom, pepper, and turmeric
(A) P-II, Q-I, R-IV, S-III
(B) P-I, Q-II, R-III, S-IV
(C) P-II, Q-I, R-III, S-IV
(D) P-I, Q-II, R-IV, S-III
(E) Answer not known

125. The Mega Food Park scheme operates on a 'Hub and Spoke' model. In this context, what serves as the 'Spokes' that collect fresh produce directly from farmers?
(A) Collection Centres (CC) and Primary

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83. The e-NAM (National Agriculture Market) platform, a pan-India electronic trading portal, was launched in which year?
(A) 2014
(B) 2016
(C) 2018
(D) 2020
(E) Answer not known

84. Match the items in List I with those in List II and select the correct option:
List I: (Marketing Concepts)
P. APMC
Q. MSP
R. Buffer Stock
S. PDS
List II: (Functions)
I. Distribution of essential commodities at subsidized rates
II. Maintenance of food reserves to ensure food security
III. Regulation of physical agricultural markets to prevent exploitation
IV. Guaranteed price offered by the government to farmers
(A) P-III, Q-IV, R-II, S-I
(B) P-IV, Q-III, R-I, S-II
(C) P-III, Q-II, R-IV, S-I
(D) P-I, Q-IV, R-II, S-III
(E) Answer not known

85. A farmer in Tamil Nadu wishes to discover prices and sell his turmeric crop directly to a buyer in Maharashtra without moving the produce physically until the sale is confirmed. Which government initiative facilitates this?
(A) e-NAM platform
(B) Minimum Support Price (MSP)
(C) Paramparagat Krishi Vikas Yojana (PKVY)
(D) Kisan Credit Card (KCC)
(E) Answer not known

86. Consider the following statements regarding the Minimum Support Price (MSP) in India:
I. It is announced by the Government of India after the harvest of crops.
II. It is recommended by the Commission for Agricultural Costs and Prices (CACP).
III. It officially covers 22 mandated crops and Fair and Remunerative Price for sugarcane.
IV. It is legally binding on private traders, who cannot buy below this price.
Which of the above statement(s) is/are incorrect?
(A) I, II and III
(B) I, II and IV
(C) I and IV
(D) III and IV
(E) Answer not known

87. Which of the following pairs of land reform terms and their meanings is correctly matched?
(A) Intermediary - The actual tiller of the soil
(B) Tenancy - Renting of land by a cultivator from the landowner
(C) Land Ceiling - Minimum land required to be held by a farmer
(D) Consolidation - Dividing a large estate into fragmented holdings
(E) Answer not known

88. Which of the following is the primary function of the Food Corporation of India (FCI)?
(A) To provide direct cash transfers to farmers in lieu of crop loss due to natural disasters.
(B) To regulate the export and import of all cash crops in the global agricultural markets.
(C) To procure, store, and distribute food grains to ensure national food security.
(D) To mandate the use of organic fertilizers across all states to maintain soil fertility.
(E) Answer not known

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89. Select the correct sequence of steps involved in the MSP and public distribution cycle.
(A) Recommendation by CACP, Declaration by CCEA, Procurement by FCI, Distribution through PDS
(B) Declaration by CCEA, Recommendation by CACP, Procurement by FCI, Distribution through PDS
(C) Procurement by FCI, Recommendation by CACP, Declaration by CCEA, Distribution through PDS
(D) Recommendation by CACP, Procurement by FCI, Declaration by CCEA, Distribution through PDS
(E) Answer not known

90. When comparing the historical Zamindari and Ryotwari systems, which statement is true?
(A) In the Ryotwari system, the registered landholder (ryot) directly paid revenue to

(D) I, II and V
(E) Answer not known

132. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option.
Assertion (A): Despite high production, India's share in global processed food exports remains relatively small compared to raw agricultural commodities.
Reason (R): Non-tariff barriers, stringent phytosanitary standards of importing countries, and inadequate domestic cold chain infrastructure hinder processed food exports.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

133. Which of the following statements regarding the sources of agricultural credit in India is incorrect?
(A) Moneylenders are officially recognized and subsidized by NABARD to lend to farmers.
(B) Institutional sources include commercial banks, regional rural banks, and various cooperative societies.
(C) Non-institutional sources include moneylenders, traders, and relatives who provide credit to farmers.
(D) The share of institutional credit has significantly increased since the nationalization of major banks.
(E) Answer not known

134. Match the items in List I with those in List II and select the correct option:
List I: (Agricultural and Food Processing Schemes)
P. PM Kisan SAMPADA Yojana
Q. PMFME Scheme
R. Operation Greens
S. PLI Scheme for Food Processing
List II: (Primary Objectives)
I. Formalization of micro food processing enterprises
II. Creation of modern infrastructure with efficient supply chain management
III. Price stabilization for Tomato, Onion, and Potato (TOP)
IV. Creation of global food manufacturing champions
(A) P-II, Q-I, R-III, S-IV
(B) P-I, Q-II, R-IV, S-III
(C) P-III, Q-I, R-II, S-IV
(D) P-II, Q-III, R-I, S-IV
(E) Answer not known

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135. Which of the following commodities is NOT covered under the export mandate of APEDA?
(A) Floriculture products
(B) Marine products
(C) Alcoholic and non-alcoholic beverages
(D) Cereal products
(E) Answer not known

136. Arrange the following agricultural and allied commodities in descending order based on their typical share in India's total agricultural export value in recent years:
1. Marine Products
2. Basmati Rice
3. Spices
(A) 1, 2, 3
(B) 2, 1, 3
(C) 1, 3, 2
(D) 3, 2, 1
(E) Answer not known

137. Which of the following pairs of Export Promotion Board and its headquarters is incorrectly matched?
(A) Spices Board - Kochi
(B) Coffee Board - Bengaluru
(C) Tea Board - Kolkata
(D) Marine Products Export Development Authority (MPEDA) - New Delhi
(E) Answer not known

138. The Pradhan Mantri Formalisation of Micro food processing Enterprises (PMFME) scheme was launched under the overarching vision of which of the following government campaigns?
(A) Atmanirbhar Bharat (Vocal for Local)
(B) Make in India
(C) Digital India
(D) Skill India
(E) Answer not known

139. When comparing a Farmer Producer Company (FPC) with a traditional Cooperative Society, which of the following is a key distinguishing feature?

(A) An FPC operates strictly under the Cooperative Societies Act, while a Cooperative Society operates under the Companies Act.

(B) An FPC combines the cooperative principles with the regulatory framework and operational flexibility of a private limited company.

(C) Cooperative societies can only be formed by traders, whereas FPCs are formed exclusively by consumers in urban regions.

(D) FPCs are prohibited from earning profits, whereas cooperative societies are profit-maximizing corporate entities in India.

(E) Answer not known

140. Which of the following institutions serves as the apex financing agency bridging the gap between the Reserve Bank of India and rural credit institutions?

(A) State Bank of India (SBI)

(B) National Bank for Agriculture and Rural Development (NABARD)

(C) Small Industries Development Bank of India (SIDBI)

(D) National Housing Bank (NHB)

(E) Answer not known

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ANSWERS

1. (A) I and II
India's land use pattern reveals that the net sown area constitutes nearly forty-six percent of the total reporting area. Fallow lands are categorized as current or other-than-current fallow depending on the duration of uncultivated periods. These lands are left fallow to restore natural soil fertility. Permanent pastures and grazing lands cover a significantly smaller percentage of land.

2. (A) Both A and R are true and R is the correct explanation of A.
Monsoon dependency remains a critical feature of Indian agriculture because a significant portion of the total net sown area lacks permanent irrigation facilities. Nearly fifty-two percent of cultivated land relies entirely on seasonal rainfall. Consequently, the timing and spatial distribution of the southwest monsoon directly influence national crop yields, total agricultural production levels, and the overall rural economy.

3. (A) Punjab
Punjab maintains the highest percentage of its geographical area under cultivation due to its fertile alluvial plains and extensive irrigation network. Approximately eighty percent of the state's total land is dedicated to net sown area. This intensive agricultural land use is facilitated by the flat topography and the widespread availability of water from various Himalayan rivers and tube-wells.

4. (A) P-IV, Q-I, R-II, S-III
Subsistence farming prioritizes family consumption over market sales. Commercial farming utilizes modern inputs like high-yielding seeds and fertilizers to maximize profit through cash crops. Plantation agriculture involves growing a single crop on large estates using capital-intensive methods. Extensive farming is characterized by massive land holdings with relatively low yields per unit area due to minimal labor and capital inputs.

5. (A) Zaid season
The Zaid season occurs during the summer months, typically between the harvesting of Rabi crops and the sowing of Kharif crops. It is a short agricultural season characterized by the cultivation of fast-growing crops that utilize residual moisture. Common examples include watermelon, muskmelon, cucumber, and various leafy vegetables, which thrive in the warm and dry weather conditions.

6. (C) II and IV
Shifting cultivation is known by diverse local names across different Indian states. While Jhumming is prevalent in the northeastern states and Podu is used in Andhra Pradesh, other names are region-specific. Ponam is the term used in Kerala rather than Odisha. Similarly, Bewar is the local name in Madhya Pradesh, while Tamil Nadu does not use this specific term.

7. (B) Kumari - Western Ghats
Shifting cultivation is a traditional agricultural practice where forest patches are cleared and burned. In the Western Ghats region, this practice is locally known as Kumari. Other regional names include Valre or Waltre in Rajasthan, Kuruwa in Jharkhand, and Khil in the Himalayan belt. These terms reflect the widespread and localized nature of primitive subsistence farming across the country.

8. (C) The crops are highly dependent on the onset of the Southwest monsoon.
The Kharif cropping season coincides with the onset of the southwest monsoon across various parts of India. Crops are typically sown in June or July and harvested between September and October. This season is vital for water-intensive crops like rice, maize, jowar, and cotton. The success of these harvests is deeply linked to the timing and volume of monsoon rainfall.

9. (C) Kharif, Rabi, Zaid
The Indian agricultural year begins in July with the Kharif season, coinciding with the arrival of the southwest monsoon. This is followed by the

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It requires a warm and humid climate with significant rainfall, typically between one hundred and fifty and two hundred and fifty centimeters. Unlike some other crops, coffee plants are sensitive to direct, intense sunlight and are traditionally grown under the shade of taller trees for healthy development.

47. (D) Sesamum - Kharif
The cropping season for various oilseeds varies across different regions of India. In North India, sesamum is primarily grown as a Kharif crop, whereas in southern states, it is often cultivated during the Rabi season. Groundnut is typically a Kharif crop in the north, while mustard and linseed are sown in winter and harvested in spring, making them Rabi crops.

48. (C) To promote holistic growth of the horticulture sector including fruits, vegetables, root crops, and flowers.
The National Horticulture Mission was launched to promote the holistic development of the horticulture sector in India. Its objectives include increasing the production and productivity of a wide range of crops, including fruits, vegetables, flowers, and spices. The mission focuses on improving farm income, providing nutritional security, and enhancing post-harvest management and marketing infrastructure to reduce losses and improve returns.

49. (A) Plucking, Withering, Rolling, Fermentation, Drying
The production of black tea involves a series of controlled processing steps to develop its characteristic flavor and color. The cycle begins with the careful plucking of young leaves and buds. These are then subjected to withering to reduce moisture. Subsequent stages include rolling to break leaf cells, fermentation to develop aroma, and finally, drying to stabilize the product for consumption.

50. (D) Tea requires evenly distributed rainfall throughout the year, whereas coffee requires a dry spell for bud development.
Although both tea and coffee are prominent plantation crops in India, they have distinct physiological requirements. Tea requires evenly distributed rainfall throughout the year to promote the continuous growth of young leaves. In contrast, coffee cultivation benefits from a specific dry spell during the winter months, which is necessary for the proper development of flower buds and the uniform ripening.

51. (A) I, II, III and IV
Horticulture plays a vital role in India's agricultural economy, contributing significantly to the gross value added and providing high employment opportunities. India ranks as the world's second-largest producer of both fruits and vegetables. Major crops like mangoes, bananas, and citrus fruits dominate the sector. Due to higher per-unit value, horticulture often provides better remuneration to farmers than cereals.

52. (A) Both A and R are true and R is the correct explanation of A.
India is a significant producer of oilseeds, yet it remains one of the world's largest importers of edible oils. This dependency arises because domestic production cannot keep pace with the rapidly growing demand. The situation is further compounded by relatively low per-hectare yields and the fact that oilseed cultivation is often relegated to marginal, rainfed lands with limited irrigation facilities.

53. (A) India is the absolute largest producer and exporter of tobacco in the world.
Tobacco is an important commercial crop introduced to India by the Portuguese in the sixteenth century. It requires a frost-free environment and specific temperature ranges for optimal leaf quality. Andhra Pradesh is a major producer, especially of the Virginia variety. While India is a top global producer and exporter, it is not the absolute largest, as China consistently holds rank.

54. (A) P-II, Q-I, R-IV, S-III
India produces a diverse range of fruits suited to its various agro-climatic zones. Temperate fruits like apples are primarily grown in the cooler climates of Jammu and Kashmir. Uttar Pradesh is the leading producer of mangoes, while Bihar is famous for its litchi production. Tropical fruits like bananas are extensively cultivated in southern states, including Andhra Pradesh and Tamil Nadu.

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for planning, data collection, and assessing agricultural performance across the different cropping seasons of Kharif, Rabi, and Zaid.

19. (B) Around 45 percent
Agriculture and its allied sectors continue to be the primary source of livelihood for a substantial portion of the Indian population. Although the sector's contribution to the Gross Domestic Product has declined, it still employs approximately forty-five percent of the total workforce. This high dependency highlights the importance of agricultural growth for rural development and national economic stability.

20. (C) High-Yielding Variety (HYV) seeds and mechanized implements have significantly increased per hectare productivity.
Modern technology has played a transformative role in Indian agriculture by enhancing productivity through improved inputs and processes. The introduction of high-yielding variety seeds, combined with the use of mechanized implements like tractors and harvesters, has significantly increased output per hectare. While technology improves efficiency, it has not entirely replaced manual labor or eliminated the sector's deep dependence on rainfall.

21. (C) I and III
Rice is a tropical crop that thrives in environments with high temperatures, typically exceeding twenty-five degrees Celsius. It requires high humidity and substantial annual rainfall, generally above one hundred centimeters. The crop is traditionally grown in standing water during its vegetative stage, especially in the fertile alluvial soils of the river valleys and coastal plains across the country.

22. (A) Both A and R are true and R is the correct explanation of A.
High productivity in rice cultivation is not solely dependent on high rainfall if efficient irrigation systems are present. Tamil Nadu serves as a prime example, achieving significant yields through a robust network of canals and tanks. These artificial water sources compensate for the lower natural precipitation compared to eastern states, ensuring that the water-intensive requirements of rice are consistently met.

23. (B) Uttar Pradesh
Uttar Pradesh is the leading producer of wheat in India, contributing the largest share to the national output. While states like Punjab and Haryana have higher yields per hectare due to intensive cultivation and the early benefits of the Green Revolution, the vast geographical area and fertile plains of Uttar Pradesh enable it to maintain its top position in production.

24. (A) P-II, Q-I, R-IV, S-III
Millets are a group of highly nutritious, small-seeded grasses widely grown as cereal crops. Sorghum is commonly known as jowar, while pearl millet is referred to as bajra. Finger millet, known for its high calcium content, is called ragi. Foxtail millet is known locally as kangni. These hardy crops are essential for food security in arid regions.

25. (D) Pulses
Pulses are leguminous plants that possess the unique ability to fix atmospheric nitrogen through symbiotic bacteria in their root nodules. This process naturally enriches the soil and restores its fertility, making pulses an ideal crop for rotation with cereals. Additionally, most pulses are drought-tolerant and require minimal irrigation, making them suitable for cultivation in semi-arid and moisture-deficient regions.

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26. (C) III and IV
Wheat cultivation requires specific environmental conditions, including a cool growing season and bright sunshine during the ripening phase. The ideal annual rainfall range for wheat is between fifty and seventy-five centimeters, rather than heavy precipitation. Furthermore, while a cool climate is necessary, extreme frost can be highly damaging to the crop, negatively impacting the final yield and quality.

27. (B) Tea - Assam
India is a major producer of various plantation and cash crops, with specific states leading in production based on their climatic suitability. Assam is the premier state for tea cultivation, accounting for more than half of the national output. Other correct associations include West Bengal for jute, Kerala for natural rubber, and Karnataka for the highest production of coffee.

Rabi season, which starts in the winter months of October or November. Finally, the Zaid season occurs during the summer months, bridging the gap between the Rabi harvest and the next Kharif sowing cycle.

10. (A) Intensive farming has high yield per hectare, whereas extensive farming has low yield per hectare.
Intensive subsistence farming is practiced in densely populated areas where high pressure on land necessitates high labor inputs and fertilizers to achieve high yields per hectare. In contrast, extensive farming occurs in regions with low population density and large landholdings. Here, the total production might be high, but the yield per unit area remains relatively low.

11. (A) I, II, III and IV
Several physical and geographical factors determine the cropping patterns and agricultural practices in India. Primary determinants include climatic conditions such as rainfall and temperature, the physical and chemical characteristics of the soil, and the relief or topography of the land. The availability and reliability of irrigation also play a crucial role in deciding which crops are cultivated.

12. (C) A is true but R is false.
The declining share of agriculture in the national Gross Domestic Product is a structural transformation common in developing economies. While the sector's relative contribution decreases as industries and services grow faster, the absolute value and volume of agricultural production in India have actually increased over time. This trend indicates that the sector remains productive despite its diminishing percentage.

13. (A) Currently, more than 40 percent of India's total geographical land is classified under dense forest cover.
India's National Forest Policy of 1988 established a target of maintaining thirty-three percent of the total geographical area under forest cover to ensure ecological stability. Current data shows that the actual forest cover is significantly lower than forty percent. While the expansion of agriculture historically impacted forest lands, modern strategies like agroforestry aim to integrate trees with crops.

14. (A) P-II, Q-III, R-I, S-II
Wheat and gram are major Rabi crops sown in the winter months and harvested in the spring. Paddy is the primary Kharif crop, requiring high temperatures and substantial water during the monsoon season. Cucumber and other gourds are typically grown during the short Zaid season in summer. This seasonal diversity allows for multiple harvests from the same land annually.

15. (D) Mustard
Kharif crops are those sown during the monsoon season, including staple cereals and pulses like jowar, bajra, and arhar. These crops require high temperatures and varying amounts of rainfall. Mustard, however, is a cool-weather crop sown in the winter months and harvested in the spring. Therefore, it is categorized as a Rabi crop rather than a Kharif crop.

16. (A) 3, 1, 2, 4
Shifting cultivation, also known as slash-and-burn agriculture, follows a specific sequence of operations. First, farmers select a suitable patch of forest land. The standing vegetation is then slashed and left to dry. Once dried, the biomass is burned to clear the ground and provide ash as a nutrient source. Finally, seeds are sown directly into the nutrient-rich ashes.

17. (B) Dryland Farming - Practiced in regions with rainfall above 150 cm
Dryland farming is specifically practiced in regions with limited water resources, typically receiving annual rainfall of less than seventy-five centimeters. These areas focus on moisture conservation and drought-resistant crops. In contrast, regions with rainfall exceeding one hundred and fifty centimeters are suitable for wetland farming or plantation agriculture. The other matched pairs correctly describe the characteristic nature of farming.

18. (D) July to June
The official agricultural crop year in India follows the seasonal cycle of the monsoon. It begins in July, coinciding with the sowing of Kharif crops, and ends in June of the following calendar year. This timeframe is used by the government

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37. (A) Cotton - 210 to 250 cm
Different crops have specific annual rainfall requirements for optimal growth and yield. Rice requires abundant water, typically over one hundred centimeters. Wheat and bajra are suited for drier conditions, needing fifty to seventy-five and thirty to fifty centimeters, respectively. Cotton, however, requires moderate rainfall between fifty and one hundred centimeters; excessive precipitation can damage the developing bolls.

38. (D) Coimbatore
The ICAR-Sugarcane Breeding Institute is a premier research organization dedicated to the improvement of sugarcane varieties. It is located in Coimbatore, Tamil Nadu. Since its inception in 1912, the institute has played a crucial role in developing high-yielding and disease-resistant varieties, which have significantly enhanced productivity and sucrose content across different agro-climatic zones in India.

39. (B) They are entirely devoid of essential minerals like calcium and iron.
Millets are renowned for their exceptional nutritional profile, often surpassing major cereals like rice and wheat. They are gluten-free, possess a low glycemic index, and are rich in dietary fiber and protein. Far from being devoid of minerals, they are excellent sources of essential nutrients; finger millet, for instance, is particularly noted for having the highest calcium content among cereals.

40. (C) Jute
Agricultural products are broadly categorized based on their primary use. Food crops include cereals like barley, oilseeds like groundnut, and spices like turmeric, which are directly consumed or used in food preparation. Jute, on the other hand, is a fiber crop used primarily for industrial purposes such as manufacturing sacks and ropes. It is therefore classified as a commercial crop.

41. (A) I and II
Cotton is a major fiber crop that requires specific climatic and soil conditions. It thrives in the black cotton soil of the Deccan plateau, which is known for its moisture-retention properties. The crop necessitates a long growing period of approximately two hundred and ten frost-free days and bright sunshine. Moderate rainfall is sufficient, as heavy precipitation can negatively affect fiber quality.

42. (A) Both A and R are true and R is the correct explanation of A.
The sugar industry has witnessed a significant geographical shift from northern India towards the southern and western states. This concentration in states like Maharashtra and Tamil Nadu is driven by favorable climatic conditions. The tropical climate in these regions results in sugarcane with higher sucrose content. Additionally, the maritime influence extends the crushing season, improving the overall efficiency of mills.

43. (B) Gujarat
Groundnut is a major oilseed crop that accounts for nearly half of the total oilseed production in India. Gujarat is the leading producer, consistently contributing a substantial share to the national output. The state's sandy-loam soils and favorable climatic conditions are well-suited for groundnut cultivation. Other significant producers include Rajasthan, Tamil Nadu, and Andhra Pradesh, which also have large areas.

44. (A) P-I, Q-II, R-III, S-IV
India is known as the home of spices, with different regions specializing in specific types. Kerala is the primary producer of black pepper, often called black gold. Saffron cultivation is uniquely concentrated in the temperate climate of Jammu and Kashmir. Telangana and Maharashtra lead in turmeric production, while Rajasthan and Madhya Pradesh are major hubs for seed spices like coriander.

45. (A) Gently sloping hilly terrains with well-drained soils
Tea is a plantation crop that requires specific environmental and topographical conditions. It thrives in deep, fertile, and well-drained soils rich in humus. Sloping hilly terrains are essential for tea estates because the crop is highly sensitive to stagnant water. Proper drainage ensures that water does not collect around the roots, which would otherwise lead to root rot and poor health.

46. (C) II and IV
Coffee cultivation in India is primarily restricted to the hilly regions of the southern states.

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28. (B) To promote millets as climate-resilient, nutritionally rich crops suitable for sustainable agriculture.
The United Nations declared 2023 as the International Year of Millets to raise global awareness about the nutritional and ecological benefits of these ancient grains. Millets are celebrated for being climate-resilient crops that can thrive in harsh environments with minimal water. Promoting their cultivation and consumption supports sustainable agriculture and addresses global health challenges by providing nutrient-dense food options.

29. (A) Nursery preparation, Transplanting, Tillering, Panicle initiation
The cultivation of rice involves several distinct physiological and management stages. The process typically begins with nursery preparation, where seeds are germinated and grown into seedlings. These seedlings are then transplanted into flooded main fields. This is followed by the tillering stage, where the plant develops additional stems, and finally, panicle initiation, which marks the beginning of the reproductive phase.

30. (C) Rice is primarily a tropical crop requiring standing water, while wheat is a temperate crop sensitive to waterlogging.
Rice and wheat have contrasting environmental requirements that influence their geographic distribution. Rice is a tropical crop that requires high temperatures and standing water for optimal growth. In contrast, wheat is a temperate crop that prefers cool weather and well-drained soils, as it is highly sensitive to waterlogging. These differences dictate their dominance in the eastern and northwestern regions, respectively.

31. (C) III, IV and V
Millets are hardy, drought-resistant crops well-suited for cultivation in poor soil conditions and semi-arid climates. They possess a significantly lower water footprint compared to staple crops like rice and are naturally heat-tolerant. While they are nutritionally superior and rich in minerals, they are primarily grown for domestic consumption rather than being exclusively produced for high-volume European export markets.

32. (A) Both A and R are true and R is the correct explanation of A.
Farmers frequently include pulses in crop rotation cycles because of their leguminous nature. These plants house nitrogen-fixing bacteria in their roots, which convert atmospheric nitrogen into a form that enriches the soil. By restoring vital nutrients naturally, pulses help maintain soil health and reduce the requirement for synthetic nitrogenous fertilizers, benefiting the subsequent crops grown in the same field.

33. (B) It grows best in highly saline coastal soils.
Maize is a versatile crop used for both human consumption and animal fodder. It generally requires temperatures between twenty-one and twenty-seven degrees Celsius and thrives best in old alluvial soils. While it is predominantly a Kharif crop, some states like Bihar cultivate it successfully during the Rabi season. However, it is not suited for highly saline coastal soils.

34. (A) P-II, Q-I, R-IV, S-III
Crop productivity in India has been enhanced by the development of specific high-yielding varieties. Sonalika is a well-known semi-dwarf variety of wheat, while IR-8 was instrumental in the Green Revolution for rice. Sujata is a prominent variety of cotton valued for its fiber quality. CO-0238 is a high-yielding, high-sucrose variety of sugarcane that has revolutionized production in northern states.

35. (A) Barley
Millets are small-seeded grasses that include crops such as jowar, bajra, and ragi. These are often categorized as coarse grains due to their hardy nature and nutritional profile. Barley, although also a cereal grain, belongs to a different botanical group and is typically classified alongside wheat as a major Rabi cereal rather than being included in the millet category.

36. (B) 1, 3, 2
The production of pulses in India is concentrated in the central and western regions where the climate is suitable for these drought-hardy crops. Madhya Pradesh consistently leads the country in total pulse output. Rajasthan and Maharashtra are also major contributors, often alternating in the second and third positions based on seasonal rainfall and the total area sown.

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55. (B) Black Pepper
Oilseeds are crops grown primarily for the extraction of edible or industrial oils from their seeds. This category includes soybean, sunflower, and castor seed, which are major contributors to the domestic oil pool. Black pepper, however, is a spice produced from the dried berries of a perennial vine. It is used globally as a seasoning and does not fall under oilseeds.

56. (A) 1, 2, 3
Sugarcane cultivation is a major agricultural activity in both subtropical and tropical regions of India. Uttar Pradesh consistently ranks as the largest producer, benefiting from its vast fertile plains and extensive irrigation. Maharashtra follows as the second-largest producer, noted for its high-sucrose varieties. Karnataka maintains the third position, contributing significantly to the total national sugarcane and sugar output.

57. (D) Saffron - Assam
Spices are highly region-specific crops in India due to their distinct climatic requirements. Kerala is the leading producer of small cardamom, and Tamil Nadu is a major source of cloves. Gujarat dominates the production of seed spices like cumin. Saffron, however, requires a temperate climate and is grown exclusively in the valley of Kashmir; it is not cultivated in Assam.

58. (A) Chikmagalur, Karnataka
The Central Coffee Research Institute is the premier organization for coffee research in India. It is located in the Chikmagalur district of Karnataka, which is historically recognized as the birthplace of coffee cultivation in the country. The institute focuses on developing improved coffee varieties, pest management strategies, and sustainable cultivation practices to support the growth of the coffee industry.

59. (B) Intercropping
Intercropping is a modern agricultural practice where two or more crops are grown simultaneously on the same piece of land in a specific spatial arrangement. A common method involves planting alternating rows of tall-growing and short-growing crops. This technique maximizes land use efficiency, reduces the risk of total crop failure, and can help in naturally managing pest populations.

60. (B) Arabica is grown at higher altitudes and has a milder flavor, while Robusta is grown at lower altitudes and is hardier.
India produces two main varieties of coffee: Arabica and Robusta. Arabica is typically grown at higher altitudes and is prized for its delicate flavor and superior aroma, although it is more susceptible to pests. Robusta is a hardier variety grown at lower elevations; it contains more caffeine and has a stronger taste. These varieties cater to different market segments.

61. (A) I and II
Irrigation practices in India are dictated by regional geography and water availability. The perennial rivers of the Northern Plains support an extensive network of canal irrigation. In the rocky terrain of Peninsular India, where digging wells is difficult, tank irrigation is traditionally used. Although some might underestimate them, wells and tube-wells actually constitute the largest source of irrigation nationwide.

62. (A) Both A and R are true and R is the correct explanation of A.
Tank irrigation is a traditional and highly effective method used in the Deccan plateau. The region's hard, crystalline rock structure makes the construction of canals and the digging of deep wells challenging and expensive. Instead, the undulating topography provides natural depressions that are easily converted into tanks to store monsoon rainwater, which is then used for agricultural purposes.

63. (C) Over 60 percent
Groundwater remains the most significant source of irrigation in India, predominantly through the use of wells and tube-wells. It currently accounts for over sixty percent of the total net irrigated area. The widespread adoption of groundwater irrigation is due to its reliability and the flexibility it offers farmers, allowing for timely water application regardless of constraints associated with canal schedules.

64. (A) P-IV, Q-III, R-II, S-I
India has developed numerous multi-purpose river valley projects to harness water for irrigation and power. The Bhakra Nangal project is built on the Sutlej River. The Hirakud Dam, one of the longest in the world, is situated on the Mahanadi

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River. The Mettur Dam serves the Kaveri delta, while the Nagarjuna Sagar project is a major facility on the Krishna River.

65. (B) Severe waterlogging and soil salinity
While the introduction of canal irrigation in arid regions like northwestern India has significantly boosted agricultural production, it has also brought adverse environmental impacts. The continuous and often excessive application of water, combined with poor drainage systems, has led to widespread waterlogging. This process causes salts to rise to the soil surface, resulting in increased salinity and land degradation.

66. (D) IV only
The Green Revolution was a strategy aimed at achieving self-sufficiency in food grain production through intensive modern practices. Key components included the distribution of high-yielding variety seeds, the widespread application of chemical fertilizers and pesticides, and the expansion of assured irrigation facilities. Contrary to these modern interventions, the promotion of traditional organic farming methods was not part of the framework.

67. (A) Golden Revolution - Horticulture and Honey
Various agricultural revolutions in India have focused on increasing the production of specific commodities. The Golden Revolution targeted the rapid growth of the horticulture sector and honey production. Other initiatives include the Yellow Revolution for oilseeds and the Silver Revolution for eggs and poultry. These focused programs have played a vital role in diversifying the agricultural landscape and enhancing security.

68. (C) Achieving sustainable agricultural growth while ensuring ecological balance and soil health.
The Second Green Revolution, often referred to as the Evergreen Revolution, aims to address the limitations of the first phase by focusing on long-term sustainability. Its primary objective is to increase agricultural productivity without causing environmental damage. This involves promoting soil health, water conservation, and balanced nutrient use, thereby ensuring food security while maintaining the ecological balance and natural resources.

69. (A) Green Revolution, White Revolution, Blue Revolution
India's agricultural transformation began with the Green Revolution in the mid-1960s, focusing on cereals like wheat and rice. This was followed by the White Revolution, or Operation Flood, launched in 1970 to boost milk production. The Blue Revolution, aimed at the integrated development of the fisheries sector, gained significant momentum later. These sequential initiatives have collectively achieved self-sufficiency.

70. (D) Phase I was restricted primarily to wheat-growing regions, while Phase II saw the introduction of HYV seeds to more crops and regions.
The Green Revolution in India occurred in two distinct phases. The first phase, spanning the mid-1960s to mid-1970s, was primarily restricted to wheat-growing regions like Punjab, Haryana, and western Uttar Pradesh. The second phase, from the mid-1970s to the 1980s, saw the technology and high-yielding variety seeds spread to a wider range of crops, most notably rice.

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71. (A) I, II, III and IV
The White Revolution, also known as Operation Flood, was a landmark program that transformed India into the world's largest milk producer. Launched in 1970 and spearheaded by the National Dairy Development Board under the leadership of Dr. Verghese Kurien, it established a national milk grid. This system effectively linked rural milk producers with urban consumers through dairy cooperatives.

72. (A) Both A and R are true and R is the correct explanation of A.
Inland fisheries currently contribute a larger share to India's total fish production compared to marine fisheries. This shift is primarily attributed to the success of the Blue Revolution, which has promoted intensive aquaculture and the utilization of diverse water bodies like reservoirs and tanks. These developments have enabled a significant increase in the output of freshwater fish nationwide.

73. (D) It resulted in an absolute decline in the overall food grain production of the country.
While the Green Revolution was immensely successful in making India self-sufficient in food grains, it had several negative side effects. These include increased regional disparities, severe depletion of groundwater in intensive zones, and rising income inequality. However, an absolute decline in food grain production was never a result; instead, the country witnessed a massive and sustained increase in output.

74. (A) P-III, Q-IV, R-I, S-II
Major dams in India serve as critical infrastructure for irrigation and hydroelectric power generation. The Sardar Sarovar Dam is a key project in Gujarat on the Narmada River. The Tungabhadra Dam is located in Karnataka. Idukki is a prominent arch dam situated in the state of Kerala. The Tehri Dam, one of the highest, is located in Uttarakhand.

75. (B) Tube-wells
Irrigation sources are classified based on where the water is drawn from. Surface water irrigation utilizes water from rivers, lakes, and reservoirs through systems like canals, tanks, and ponds. Tube-wells and traditional wells, however, extract water from underground aquifers. Therefore, they are classified as groundwater irrigation sources and are distinct from methods that rely on water collected on the surface.

76. (A) 1, 2, 3
The relative importance of irrigation sources in India has changed significantly over the decades. Currently, groundwater from tube-wells and other wells is the dominant source, accounting for the largest share of the net irrigated area. Canals, primarily fed by perennial rivers, represent the second-largest source. Tanks, once very common in the south, now contribute a much smaller percentage.

77. (A) Black Revolution - Coal production
India's agricultural history is marked by several "color-coded" revolutions targeting specific sectors. The Red Revolution focused on meat and tomato production, the Round Revolution on potatoes, and the Pink Revolution on onions and prawns. The Black Revolution was actually aimed at increasing the production of petroleum and crude oil through ethanol blending, rather than focusing on the coal sector.

78. (C) Anand
The National Dairy Development Board was established to replicate the success of the Kaira District Co-operative Milk Producers' Union across India. Its headquarters is located in Anand, Gujarat. This institution was instrumental in planning and implementing Operation Flood, which organized rural milk producers into cooperatives and revolutionized the dairy industry, eventually making India a global leader in milk production.

79. (D) Dr. M. S. Swaminathan
Dr. M. S. Swaminathan is globally recognized as the Father of the Green Revolution in India for his leadership in introducing high-yielding varieties of wheat and rice. His scientific research and policy advocacy were pivotal in transforming Indian agriculture from food deficiency to self-sufficiency. His work emphasized sustainable practices and the welfare of small and marginal farmers.

80. (C) Punjab
Punjab has the highest percentage of its net sown area under irrigation in India, with nearly ninety-eight percent of its cultivated land being covered. This high level of irrigation is supported by a dense network of canals and a massive number of tube-wells. This assured water supply allows for intensive multi-cropping and is a major reason why the state remains a leader.

81. (A) I and II
Post-independence land reforms in India were designed to achieve social justice and improve agricultural efficiency. The first major step was the abolition of intermediaries like Zamindars to establish a direct link between the state and the tiller. Tenancy reforms followed, focusing on regulating rents and providing security. While consolidation was encouraged, it aimed to reduce fragmentation for small farmers.

82. (A) Both A and R are true and R is the correct explanation of A.
The implementation of land ceiling laws in India faced significant challenges and was often evaded by large landowners. Many utilized legal

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loopholes to retain control by transferring land ownership to relatives or fictitious persons, a practice known as benami transfers. These tactics successfully bypassed the intended redistribution of surplus land to landless laborers, resulting in less-than-optimal agrarian reform outcomes.

83. (B) 2016
The National Agriculture Market, or e-NAM, was launched in 2016 as a pan-India electronic trading portal. It was designed to network existing Agricultural Produce Market Committee mandis to create a unified national market for agricultural commodities. By providing a single window service for all information and services, it aims to reduce information asymmetry and help farmers achieve better prices.

84. (A) P-III, Q-IV, R-II, S-I
India's agricultural marketing system includes several key components. The Agricultural Produce Market Committee regulates physical markets to prevent the exploitation of farmers. The Minimum Support Price is a guaranteed price offered by the government to protect farmers against sharp price drops. Buffer stocks are food reserves maintained for national security, while the Public Distribution System ensures grains reach consumers.

85. (A) e-NAM platform
The e-NAM platform allows farmers to showcase their produce digitally and discover prices from buyers across different states. This electronic system facilitates inter-mandi and inter-state trade, enabling a seller in one region to conclude a sale with a buyer in another without immediate physical movement. This transparency in price discovery and expanded market access significantly improves farmer income potential.

86. (C) I and IV
The Minimum Support Price is a critical policy tool announced by the Government of India at the beginning of the sowing season for various crops. These prices are based on recommendations from the Commission for Agricultural Costs and Prices. While it provides a safety net, MSP is not legally binding on private traders. The official regime covers twenty-two mandated crops.

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87. (B) Tenancy - Renting of land by a cultivator from the landowner
Land reform terminology describes different aspects of agrarian restructuring. Tenancy refers specifically to the practice where a cultivator rents land from a landowner under various formal or informal agreements. Other terms include land ceilings, which set a maximum limit on individual holdings to promote redistribution, and consolidation, which involves merging fragmented plots into a single unit to improve efficiency.

88. (C) To procure, store, and distribute food grains to ensure national food security.
The Food Corporation of India is a statutory body central to the country's food security system. Its primary responsibilities involve the large-scale procurement of food grains from farmers at the Minimum Support Price and maintaining strategic buffer stocks. These grains are then stored in a network of warehouses and distributed across the country to fulfill Public Distribution System requirements.

89. (A) Recommendation by CACP, Declaration by CCEA, Procurement by FCI, Distribution through PDS
The agricultural price support and distribution cycle follows a structured administrative process. It begins with the Commission for Agricultural Costs and Prices recommending the Minimum Support Price. The Cabinet Committee on Economic Affairs then officially declares these prices. Subsequently, the Food Corporation of India procures the grains during harvest. Finally, these stocks are distributed to consumers through the Public Distribution System.

90. (A) In the Ryotwari system, the registered landholder (ryot) directly paid revenue to the state.
During the colonial period, different land revenue systems were implemented across India. In the Ryotwari system, common in the south and west, the state recognized the individual landholder as the owner and collected revenue directly from them. In contrast, the Zamindari system involved intermediaries who collected rent from the actual tillers and paid a fixed portion to the administration.

91. (A) I, II, III and IV
The Pradhan Mantri Fasal Bima Yojana is a comprehensive crop insurance scheme designed to protect farmers against various risks. It features low and uniform premium rates: two percent for Kharif crops, one and a half percent for Rabi crops, and five percent for annual commercial and horticultural crops. The scheme provides end-to-end coverage, from prevented sowing to post-harvest losses.

92. (A) Both A and R are true and R is the correct explanation of A.
The National Food Security Act of 2013 marked a significant shift in India's policy by making food security a legal right. The Act mandates the provision of highly subsidized food grains to approximately two-thirds of the total population. Specifically, it covers up to seventy-five percent of the rural population and fifty percent of the urban population, ensuring guaranteed access.

93. (A) It strictly prohibits the export of all agricultural commodities produced in India.
The Essential Commodities Act was enacted to protect consumers by ensuring the steady supply of critical items and preventing hoarding. The government has the authority to regulate production, supply, and distribution, including the power to impose stock limits on traders for specified items. While it allows for trade regulation, it does not mandate a blanket prohibition on agricultural commodity exports.

94. (A) P-II, Q-I, R-III, S-IV
The premium structure under the Pradhan Mantri Fasal Bima Yojana is designed to be affordable for all categories of farmers. Cultivators pay a maximum premium of two percent for Kharif food and oilseed crops and one and a half percent for Rabi crops. For both annual commercial and annual horticultural crops, the premium rate is fixed at five percent.

95. (D) Apple
The Government of India's Minimum Support Price regime currently covers twenty-two mandated crops, including staple cereals like paddy and wheat and oilseeds like copra. These prices provide a guaranteed floor price for these commodities nationwide. Perishable horticultural crops, such as apples, are generally not included in this mandatory federal list, although they may be covered under separate intervention schemes.

96. (B) 2, 1, 4, 3
The evolution of India's agricultural policy is reflected in the chronological introduction of various legislative and digital initiatives. The Essential Commodities Act was passed in 1955 to regulate supply chains. Decades later, the National Food Security Act was enacted in 2013. In 2016, the government introduced the Pradhan Mantri Fasal Bima Yojana in January, followed by the e-NAM platform in April.

97. (B) APMC - Regulates international agricultural exports
Several specialized institutions manage different aspects of Indian agriculture. The Commission for Agricultural Costs and Prices recommends price supports, while the Food Corporation of India handles large-scale procurement and storage. NAFED plays a key role in procuring oilseeds and pulses. However, the Agricultural Produce Market Committee is a state-level body that regulates local physical markets for farmers.

98. (D) Shanta Kumar Committee
In 2014, the Government of India constituted a High-Level Committee under the chairmanship of Shanta Kumar to recommend the restructuring of the Food Corporation of India. The committee's goal was to improve the efficiency of grain procurement, storage, and distribution. Its recommendations included moving towards direct cash transfers for food subsidies and increasing the involvement of state governments in management.

99. (A) To fix a maximum limit on landholdings and distribute the surplus land to landless agricultural laborers.
Land ceiling legislation is a key component of agrarian reform aimed at reducing land ownership inequality. The primary objective is to fix a legal maximum limit on the amount of land an individual or family can hold. Any land owned in excess of this ceiling is classified as surplus and acquired by the state for redistribution to landless laborers.

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100. (C) It eliminated all middlemen and gave 100% consumer price directly to the farmer.
The traditional Agricultural Produce Market Committee system has faced several criticisms over the years. Common issues include the fragmentation of markets, the emergence of powerful trader cartels, and the imposition of multiple layers of market fees. Far from eliminating middlemen, the system was frequently criticized for the excessive presence of intermediaries who absorbed a large portion of the final consumer price.

101. (C) I and III
The Soil Health Card Scheme is a national initiative aimed at helping farmers understand the nutrient requirements of their land. These cards provide detailed information on the current status of macro and micro nutrients in the soil. Based on these assessments, the scheme offers specific, crop-wise recommendations for the application of fertilizers. This scientific approach ensures correct input use.

102. (C) A is true but R is false.
The Kisan Credit Card scheme is a vital financial tool that provides farmers with simplified access to institutional credit. It is designed to be flexible, meeting not only the immediate costs of seeds and fertilizers but also covering post-harvest expenses, domestic consumption requirements, and the maintenance of farm assets. It serves broader agricultural and livelihood needs beyond simple cultivation inputs.

103. (B) Sikkim
Sikkim achieved a historic milestone in 2016 by becoming the first state in India to be declared fully organic. This transition involved the complete phase-out of chemical fertilizers and synthetic pesticides across the entire state. The initiative has promoted biodiversity, improved soil health, and positioned Sikkim as a global leader in sustainable agriculture, attracting international attention for its environmental commitment.

104. (A) P-III, Q-IV, R-I, S-II
The Pradhan Mantri Krishi Sinchai Yojana integrates several components to improve water use efficiency. The Accelerated Irrigation Benefit Programme focuses on completing long-pending projects. Har Khet Ko Pani aims to create new water sources through minor irrigation. Per Drop More Crop promotes precision technologies like drip systems. The Watershed Development component emphasizes soil and water conservation through rainwater harvesting.

105. (D) Precision Agriculture
Precision agriculture is a modern farming management concept that utilizes digital technologies to ensure that crops and soil receive exactly what they need for optimum productivity. By using tools like drones for aerial monitoring, IoT sensors for moisture analysis, and satellite imagery for health assessments, farmers can apply inputs more accurately. This approach reduces waste and enhances overall farm sustainability.

106. (C) III only
The Paramparagat Krishi Vikas Yojana is a flagship program designed to promote traditional organic farming through a cluster-based approach. It provides comprehensive support to farmers for the adoption of organic practices, certification, and marketing. The scheme encourages the use of natural inputs like bio-fertilizers while improving soil health. Since it focuses on organic principles, Genetically Modified seeds are excluded.

107. (B) Central Rice Research Institute - Cuttack
India has a robust network of agricultural research institutes specializing in various crops and disciplines. The Central Rice Research Institute is located in Cuttack, Odisha, and has been pivotal in rice breeding programs. Other prominent institutes include the Central Potato Research Institute in Shimla, the Indian Institute of Horticultural Research in Bengaluru, and the Central Institute for Cotton Research in Nagpur.

108. (B) It optimizes inputs like water and fertilizers based on exact spatial requirements, reducing cost and environmental impact.
A major advantage of precision agriculture is its ability to optimize the use of resources based on the specific needs of different parts of a field. By using detailed data to guide the application of water and fertilizers, farmers can avoid both under and over-application. This precision leads to cost savings, higher yields, and a reduced environmental footprint nationwide.

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109. (A) Registration with accredited body, Implementation of organic practices, Field inspection by certifier, Issuance of certificate
Obtaining organic certification under the National Programme for Organic Production involves a systematic process to ensure compliance with established standards. A farmer must first register with an accredited certification body. Following this, they must implement organic farming practices for a mandatory conversion period. Regular field inspections are conducted by authorized certifiers. If all standards are met, the certificate is then issued.

110. (C) Precision agriculture relies heavily on information technology and spatial data, whereas traditional farming relies on historical experience and generalized practices.
Traditional farming and precision agriculture differ fundamentally in their approach to field management. Traditional methods often rely on generalized practices and historical experience, applying uniform treatments across an entire field. In contrast, precision agriculture utilizes information technology and spatial data to manage within-field variations. This data-driven approach allows for site-specific interventions, matching inputs precisely to the localized requirements of soil.

111. (A) I, II, III and IV
The Pradhan Mantri Krishi Sinchai Yojana was launched with a comprehensive vision to improve the country's irrigation coverage and water efficiency. Its objectives include the convergence of various irrigation investments at the field level and enhancing physical access to water. The scheme also aims to integrate water source development with efficient distribution systems and promote the adoption of precision technologies.

112. (D) A is false but R is true.
Precision agriculture is still in its nascent stages in India and has not achieved widespread adoption among small and marginal farmers. While the technology offers numerous benefits, its implementation is hindered by significant barriers. These include the high initial capital cost of sensors, a lack of technical expertise among cultivators, and the prevalence of small, fragmented landholdings across regions.

113. (B) It exclusively focuses on crop research and has no mandate over animal husbandry and fisheries.
The Indian Council of Agricultural Research is the apex autonomous organization responsible for coordinating and managing agricultural research and education across the country. It operates under the Ministry of Agriculture and was instrumental in the Green Revolution. Its broad mandate is not limited to crops but also covers critical sectors such as animal husbandry, fisheries, and horticultural sciences.

114. (A) P-IV, Q-II, R-III, S-I
Agricultural universities and research institutes are strategically located across India to address regional farming needs. The Tamil Nadu Agricultural University is a leading institution in the south. G.B. Pant University in Uttarakhand was the first agricultural university established. The Punjab Agricultural University played a key role during the Green Revolution. The Indian Agricultural Research Institute remains the premier center.

115. (A) Providing direct cash subsidies to farmers based on their land size.
The Soil Health Card Scheme is a technical and advisory initiative designed to improve soil productivity through better nutrient management. It provides scientific data on twelve soil parameters, enabling farmers to identify specific deficiencies. The scheme offers tailored recommendations for the balanced application of fertilizers. However, it is not a financial program and does not provide direct cash subsidies.

116. (A) 1, 4, 2, 3
The institutional framework for agricultural credit in India has evolved through several key milestones. The process began with the nationalization of fourteen major commercial banks in 1969 to increase rural lending. This was followed by the establishment of the first Regional Rural Bank in 1975. NABARD was created in 1982, and the Kisan Credit Card scheme followed in 1998.

117. (A) Kisan Credit Card - 2014
Several flagship agricultural schemes have been launched at different times to address various farming challenges. The Soil Health Card Scheme

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than rice by law.
(D) It is known as the granary of Tamil Nadu due to its dominant paddy cultivation.
(E) Answer not known

7. Select the correct sequence of notifications and events regarding the Cauvery Delta Special Agricultural Zone.
(A) Enactment of Protected Agricultural Zone Act - Public protests against hydrocarbon projects - Notification of the Special Zone
(B) Public protests against hydrocarbon projects - Notification of the Special Zone - Enactment of Protected Agricultural Zone Act
(C) Notification of the Special Zone - Enactment of Protected Agricultural Zone Act - Public protests against hydrocarbon projects
(D) Enactment of Protected Agricultural Zone Act - Notification of the Special Zone - Public protests against hydrocarbon projects
(E) Answer not known

8. Match the traditional crop varieties of Tamil Nadu with their corresponding Geographical Indication (GI) tagged regions.
List I: (Region)
P. Erode
Q. Madurai
R. Kodaikanal
S. Sirumalai
List II: (GI Tagged Product)
I. Hill Garlic
II. Turmeric
III. Hill Banana
IV. Jasmine (Malligai)
(A) P-I, Q-III, R-II, S-IV
(B) P-III, Q-I, R-IV, S-II
(C) P-II, Q-IV, R-I, S-III
(D) P-II, Q-I, R-III, S-IV
(E) Answer not known

9. Which of the following statements is incorrect regarding traditional rice varieties of Tamil Nadu?
(A) Mappillai Samba is traditionally known to improve immunity and strength.
(B) Kullakar is a red rice variety known for its antioxidant properties.
(C) Traditional varieties often require less chemical fertilizer compared to high-yielding varieties.
(D) Kichili Samba has a high glycemic index and is heavily polished before consumption.
(E) Answer not known

10. Identify the correct statement(s) based on the Assertion (A) and Reason (R) given below:
Assertion (A): Theni and Tiruchirappalli are major hubs for banana cultivation in Tamil Nadu.
Reason (R): These districts have a cool, temperate climate with snowfall that is essential for banana fruit setting.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

11. Consider the following statements about sugarcane cultivation in Tamil Nadu.
I. It is an annual crop that requires high water availability.
II. Cooperative sugar mills play a significant role in procurement and processing.
III. It is mostly cultivated under rainfed conditions without irrigation.
IV. The Sugarcane Breeding Institute is located in Coimbatore.
Which of the combinations given below is correct?
(A) I, II and IV only
(B) II, III and IV only
(C) I and III only
(D) II and IV only
(E) Answer not known

12. What defines "Net Sown Area" in the context of Tamil Nadu's agricultural land use pattern?
(A) The total geographical area excluding the land classified under permanent forest cover.
(B) Physical area of land where crops are sown and harvested during an agricultural year.
(C) The total area under cultivation which includes lands sown more than once within the same year.
(D) The total extent of cultivable land that has remained uncultivated for a period of five

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harvest wastage. While the sector is growing, India currently processes only a small fraction of its total fruit and vegetable output, far below eighty percent. Furthermore, modern processing techniques are designed to preserve the shelf life and nutritional profile.

127. (D) Basmati Rice - Exported primarily to the Middle East and known for its aroma
India's agricultural export profile is characterized by high-value commodities that are globally renowned. Basmati rice is a flagship export, primarily destined for the Middle East and known for its unique aroma. Other significant exports include marine products and buffalo meat, which contribute substantially to earnings. Contrary to being an importer, India remains a world leader in the export of spices.

128. (C) It promotes the export of scheduled agricultural products like fruits, vegetables, meat, and cereals.
The Agricultural and Processed Food Products Export Development Authority is a specialized agency focused on enhancing the global presence of Indian agricultural goods. Its primary mandate is to promote the export of a wide range of scheduled products, including fresh fruits, vegetables, and various cereals. APEDA provides financial assistance, sets quality standards, and organizes trade fairs to help exporters access markets.

129. (B) Farm → Collection Centre → Primary Processing Centre → Central Processing Centre → Market
The supply chain in a Mega Food Park is designed to minimize waste and maximize value. The process begins at the farm, where produce is harvested. It is moved to localized Collection Centres and subsequently to Primary Processing Centres for initial sorting. From there, goods are transported to the Central Processing Centre for final value addition before reaching domestic or international markets.

130. (D) Commercial banks account for a larger share of total institutional agricultural credit disbursed compared to cooperative banks today.
The landscape of institutional agricultural credit in India has shifted significantly over the years. While cooperative credit societies were once the primary source, commercial banks now account for a much larger share of the total credit disbursed. This change is largely due to expanded rural branch networks and mandatory priority sector lending targets, which ensure significant funding is directed toward national agriculture.

131. (A) I, II, III and IV
Farmer Producer Organisations offer numerous advantages that improve the economic viability of small-scale farming. They enable better price realization through collective bargaining and facilitate easier access to modern technology and high-quality inputs. Additionally, FPOs assist in risk mitigation and allow farmers to participate in value-addition activities. By streamlining the supply chain, these organizations significantly reduce transaction costs for cultivators.

132. (A) Both A and R are true and R is the correct explanation of A.
Although India is a top producer of agricultural commodities, its global share in processed food exports remains relatively low. This is often due to stringent phytosanitary and quality standards imposed by importing nations. Domestically, the lack of a continuous and efficient cold chain infrastructure often leads to quality degradation. Overcoming these logistical and regulatory challenges is essential to boosting trade.

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133. (A) Moneylenders are officially recognized and subsidized by NABARD to lend to farmers.
Agricultural credit in India is drawn from both institutional and non-institutional sources. Institutional sources, such as commercial banks and cooperatives, are formal entities regulated by organizations like NABARD. Non-institutional sources include traditional moneylenders and traders. While private lenders still play a role, they are not officially recognized or subsidized by national development banks, and their share has declined.

134. (A) P-II, Q-I, R-III, S-IV
The government has launched several schemes to strengthen food processing. PM Kisan SAMPADA focuses on modern infrastructure and supply chains. The PMFME scheme aims at the formalization of micro-scale enterprises. Operation Greens was designed to stabilize the prices of tomatoes, onions, and potatoes.

was introduced in 2015, while both the Pradhan Mantri Fasal Bima Yojana and the e-NAM platform were launched in 2016. The Kisan Credit Card scheme is a much older initiative, having been originally introduced in 1998.

118. (C) 12 parameters
A Soil Health Card provides a comprehensive analysis of the soil's condition by testing it against twelve specific parameters. These include major nutrients like nitrogen and potassium, secondary nutrients like sulfur, and various micronutrients such as zinc. It also records chemical properties like pH and organic carbon. This detailed assessment helps farmers make informed decisions about precise fertilizer needs.

119. (B) Large corporate multinational agribusinesses
The Kisan Credit Card scheme has been progressively expanded to be more inclusive of various segments of the rural economy. Currently, it is available to owner-cultivators, tenant farmers, and sharecroppers. It also covers those engaged in allied activities such as animal husbandry and fisheries. However, the scheme is designed to support individual farmers; therefore, large corporate agribusinesses are excluded.

120. (C) Biological pest control
Biological pest control is a core component of organic farming that avoids the use of synthetic chemical pesticides. This method involves the intentional use of living organisms, such as beneficial insects or pathogens, to suppress and manage pest populations below harmful levels. By harnessing these natural enemies, farmers can protect their crops in an environmentally friendly manner that preserves biodiversity.

121. (A) I and II
NABARD was established in 1982 to serve as the apex institution for rural development. It plays a crucial role in regulating and supervising Regional Rural Banks and Cooperative Banks. While it is the primary agency for providing credit to the rural sector, it functions as a refinancing institution rather than lending directly to individual farmers for basic cultivation inputs.

122. (A) Both A and R are true and R is the correct explanation of A.
Farmer Producer Organisations are instrumental in empowering small and marginal farmers by enhancing their collective bargaining power. By organizing into these formal groups, farmers can aggregate their requirements for inputs and credit, leading to cost savings. Furthermore, by pooling produce, they can achieve economies of scale in marketing and negotiation, allowing them to bypass unnecessary intermediaries and wholesalers.

123. (C) 100 percent
To encourage modernization and global investment, the Government of India has liberalized investment norms in the food processing sector. Currently, one hundred percent Foreign Direct Investment is permitted under the automatic route for most processing activities. This policy aims to attract global technology and capital to improve the supply chain, reduce post-harvest losses, and enhance overall national industry competitiveness.

124. (A) P-II, Q-I, R-IV, S-III
India has several specialized authorities to promote the export of specific agricultural commodities. APEDA is responsible for a wide range of scheduled and processed foods, including fruits and cereals. MPEDA focuses exclusively on the development and promotion of marine and seafood exports. The Spices Board handles the marketing of various spices, while the Coffee Board supports Indian coffee exports.

125. (A) Collection Centres (CC) and Primary Processing Centres (PPC)
The Mega Food Park scheme utilizes a "Hub and Spoke" model to create an integrated value chain. In this structure, the Central Processing Centre serves as the main hub. The "spokes" are the Collection Centres and Primary Processing Centres located closer to farm gates. These centres facilitate direct collection from farmers, providing essential services like cleaning and initial sorting.

126. (C) III and IV
The food processing industry serves as a crucial link between the agricultural and manufacturing sectors, helping to add value and reduce post-

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CHAPTER 07
Agriculture of Tamil Nadu

1. Match the following cropping seasons of Tamil Nadu with their corresponding sowing months.
List I: (Cropping Season)
P. Kuruvai
Q. Samba
R. Navarai
S. Pishanam
List II: (Sowing Months)
I. August to January
II. June to July
III. September to October
IV. December to January
(A) P-I, Q-II, R-III, S-IV
(B) P-II, Q-I, R-IV, S-III
(C) P-IV, Q-III, R-I, S-II
(D) P-II, Q-IV, R-I, S-III
(E) Answer not known

2. Which of the following statements accurately represents the land use pattern regarding the forest cover in Tamil Nadu as a percentage of its total geographical area?
(A) It is exactly 33 percent, meeting the National Forest Policy target.
(B) It is approximately 45 percent due to extensive afforestation in the Eastern Ghats.
(C) It is roughly 10 percent, concentrated entirely in the delta regions.
(D) It is around 20 percent, which is lower than the required national ecological mandate.
(E) Answer not known

3. Identify the correct statement(s) based on the Assertion (A) and Reason (R) given below:
Assertion (A): The western agroclimatic zone of Tamil Nadu is highly suitable for the cultivation of commercial crops like sugarcane and turmeric.
Reason (R): This zone receives the highest annual rainfall in the state through the retreating northeast monsoon.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

4. Consider the following statements regarding the cropping seasons in Tamil Nadu.
I. Kuruvai is primarily a short-duration paddy season in the Cauvery delta.
II. Samba relies heavily on the northeast monsoon for irrigation.
III. Navarai season spans from April to May.
Which of the combinations given below is correct?
(A) I and II only
(B) II and III only
(C) I and III only
(D) I only
(E) Answer not known

5. Identify the correctly matched pair of rice varieties and their primary characteristic or association in Tamil Nadu.
(A) Mappillai Samba - Red rice variety known for enhancing physical strength
(B) Kichili Samba - Black rice traditionally cultivated for medicinal uses
(C) Kullakar - A highly polished white rice variety used for daily consumption
(D) Seeraga Samba - A genetically modified dwarf variety introduced in 2020
(E) Answer not known

6. Which of the following statements is correct regarding the Cauvery delta region in Tamil Nadu?
(A) It consists predominantly of red soils which are highly suitable for millets.
(B) Its agricultural productivity relies solely on groundwater extraction rather than canal irrigation.
(C) It restricts the cultivation of any crop other

The PLI Scheme is intended to support large-scale manufacturing and create global industry champions.

135. (B) Marine products
APEDA has a broad mandate that covers the export promotion of many agricultural and processed food categories. This includes floriculture products, cereal-based items, and various beverages. However, marine and seafood products are excluded from APEDA's jurisdiction. Instead, the responsibility for promoting and regulating the export of fish and other marine commodities lies with the Marine Products Export Development Authority.

136. (A) 1, 2, 3
India's agricultural exports are led by key commodity groups that earn significant foreign exchange. Marine products consistently rank as the top category by value in recent years. Rice, particularly the premium basmati variety, is the second-largest contributor to the total agricultural export earnings. Spices form the third-largest group. These three categories together account for a major portion of export revenue.

137. (D) Marine Products Export Development Authority (MPEDA) - New Delhi
Several export promotion boards in India have their headquarters located in regions central to the production of their mandated commodities. The Spices Board and the Marine Products Export Development Authority are both based in Kochi, Kerala. The Tea Board is headquartered in Kolkata, West Bengal. The Coffee Board is located in Bengaluru, Karnataka, which is the heart of the coffee-growing belt.

138. (A) Atmanirbhar Bharat (Vocal for Local)
The Pradhan Mantri Formalisation of Micro food processing Enterprises scheme was launched as a key component of the Atmanirbhar Bharat Abhiyan. The scheme embodies the "Vocal for Local" campaign, aiming to provide financial and technical support for upgrading micro units. By formalizing these small enterprises, the government intends to enhance competitiveness and integrate them into formal retail supply chains.

139. (B) An FPC combines the cooperative principles with the regulatory framework and operational flexibility of a private limited company.
A Farmer Producer Company is a hybrid entity that combines the social benefits of a cooperative with the management efficiency of a private limited company. While it follows cooperative principles like shared voting, it is registered under the Companies Act. This structure provides greater operational flexibility and professional management, making it more effective in handling commercial activities compared to traditional societies.

140. (B) National Bank for Agriculture and Rural Development (NABARD)
NABARD serves as the apex financing and development agency for the rural and agricultural sectors in India. It acts as a vital bridge, connecting the monetary policies of the Reserve Bank of India with the practical credit needs of rural financial institutions. By providing refinancing to various banks, NABARD ensures a steady flow of credit to support farm activities.

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years.
(E) Answer not known

13. Identify the incorrectly matched pair regarding crop cultivation centers in Tamil Nadu.
(A) Namakkal - Jasmine
(B) Coimbatore - Coconut
(C) Krishnagiri - Mango
(D) Salem - Tapioca
(E) Answer not known

14. Arrange the following districts in descending order of their contribution to cotton cultivation area in Tamil Nadu based on general historical trends.
I. Perambalur
II. Salem
III. Chennai
IV. Virudhunagar
Which of the following is the correct sequence?
(A) I, IV, II, III
(B) IV, II, I, III
(C) II, I, III, IV
(D) I, II, IV, III
(E) Answer not known

15. Which of the following districts in Tamil Nadu is NOT primarily associated with the large-scale industrial processing of tapioca into sago and starch?
(A) Salem
(B) Namakkal
(C) Dharmapuri
(D) Thanjavur
(E) Answer not known

16. Consider the following statements regarding mango cultivation in Tamil Nadu.
I. Krishnagiri is a leading district in mango area and production.
II. Alphonso is the only variety exported from Tamil Nadu.
III. Mango pulp processing industries are heavily concentrated in the northwestern zone.
IV. Banganapalli and Totapuri are widely grown varieties in the state.
V. Mango cultivation thrives best in heavily waterlogged clay soils.
Which of the combinations given below is incorrect?
(A) I, III, IV and V only
(B) II, IV and V only
(C) II and V only
(D) I, II and III only
(E) Answer not known

17. The concept of applying water directly to the root zone of plants at a slow rate to conserve water in Tamil Nadu agriculture is technically known as:
(A) Basin irrigation
(B) Drip irrigation
(C) Canal flooding
(D) Furrow irrigation
(E) Answer not known

18. Which of the following represents a factual feature of turmeric cultivation in Erode district?
(A) Turmeric cultivation in Erode was fully discontinued after 2010 due to water scarcity.
(B) Erode solely produces the seed material while cultivation happens only in other districts.
(C) The entire turmeric harvest in Erode is mandated to be used only for medicinal formulations.
(D) Erode turmeric possesses a GI tag owing to its high curcumin content and distinct colour.
(E) Answer not known

19. The 'Madurai Malligai' (Jasmine) is distinct and historically famous for its thick petals and long-lasting fragrance. Which legal framework formally protects this unique regional identity in trade?
(A) The Geographical Indications of Goods Act
(B) The Patent Act of India
(C) The Biological Diversity Act
(D) The Plant Varieties Protection Act
(E) Answer not known

20. Which crop category best exemplifies the focus of the Tamil Nadu government's revival programs like 'Nutri-Cereals Mission' in dryland regions?
(A) Plantation crops like tea and coffee
(B) Commercial crops like sugarcane
(C) Millets like Kambu, Cholam, and Ragi
(D) Fiber crops like cotton and jute
(E) Answer not known

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(C) Jhum cultivation
(D) Organic natural farming
(E) Answer not known

78. Which of the following provides a factual overview of employment in the agricultural sector of Tamil Nadu?
(A) The sector employs nearly 100% of the state's urban workforce.
(B) Employment in agriculture has seen a massive absolute increase since 2010 due to IT sector decline.
(C) Over 40% of the state's workforce still depends directly or indirectly on agriculture for their livelihood.
(D) Agricultural employment is legally restricted to specific land-owning communities.
(E) Answer not known

79. What is the specific characteristic of the 'Kullakar' traditional rice variety?
(A) Highly aromatic long-grain white rice variety used for special festivals.
(B) Genetically engineered golden rice variety enriched with high Vitamin A content.
(C) Sticky rice variety imported from Southeast Asia for commercial starch production.
(D) Red rice variety with short duration and resistance to drought.
(E) Answer not known

80. Which of the following examples correctly matches the category of an 'Agro-climatic zone' with its representative district in Tamil Nadu?
(A) Delta Zone - Coimbatore
(B) Hilly Zone - Ramanathapuram
(C) High Rainfall Zone - Kanyakumari
(D) Southern Zone - The Nilgiris
(E) Answer not known

81. Match the following GI tagged agricultural products with their corresponding districts in Tamil Nadu.
List I: (GI Tagged Product)
P. Virupakshi Hill Banana
Q. Kovilpatti Kadalai Mittai (Groundnut chikki)
R. Ramanathapuram Mundu Chilli
S. Sirumalai Hill Banana
List II: (District)
I. Dindigul
II. Thoothukudi
III. Ramanathapuram
IV. Dindigul
(A) P-II, Q-I, R-IV, S-III
(B) P-I, Q-II, R-III, S-IV
(C) P-III, Q-IV, R-I, S-II
(D) P-I, Q-III, R-II, S-IV
(E) Answer not known

82. Which of the following statements is a factual representation of rice varieties cultivated in Tamil Nadu?
(A) Traditional varieties account for 95% of the total paddy area due to strict government bans on high-yielding varieties.
(B) Basmati is the most widely cultivated rice variety in the Cauvery delta.
(C) Tamil Nadu produces only white rice varieties, with zero cultivation of red or black rice.
(D) High-yielding varieties like ADT (Aduthurai) and CO (Coimbatore) series dominate the state's commercial paddy area.
(E) Answer not known

83. Identify the correct statement(s) based on the Assertion (A) and Reason (R) given below:
Assertion (A): The cultivation of millets is heavily promoted in the rainfed areas of Tamil Nadu.
Reason (R): Millets are highly resilient to drought, require less water, and provide high nutritional security.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

84. Consider the following statements about the Cauvery Delta region.
I. It spans across districts including Thanjavur, Tiruvarur, and Nagapattinam.
II. It receives rainfall solely from the southwest monsoon.
III. It is legally protected against non-agricultural industrial exploitation like coal bed methane extraction.
Which of the combinations given below is

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28. Match the major irrigation projects in Tamil Nadu with the rivers they are built across.
List I: (Irrigation Project)
P. Mettur Dam
Q. Bhavanisagar Dam
R. Vaigai Dam
S. Papanasam Dam
List II: (River)
I. Thamirabarani
II. Cauvery
III. Bhavani
IV. Vaigai
(A) P-III, Q-II, R-I, S-IV
(B) P-II, Q-III, R-IV, S-I
(C) P-II, Q-IV, R-III, S-I
(D) P-I, Q-III, R-IV, S-II
(E) Answer not known

29. Which of the following statements is incorrect regarding agricultural irrigation in Tamil Nadu?
(A) Tamil Nadu relies equally on the southwest and northeast monsoons for its canal irrigation networks.
(B) The state has heavily promoted micro-irrigation systems like drip and sprinkler.
(C) Well irrigation constitutes the largest share of the net irrigated area in the state.
(D) The Periyar-Vaigai project is crucial for the southern agricultural districts.
(E) Answer not known

30. Identify the correct statement(s) based on the Assertion (A) and Reason (R) given below:
Assertion (A): The Tamil Nadu government provides subsidies up to 100% for small and marginal farmers to install drip irrigation systems.
Reason (R): Tamil Nadu is a water-deficit state and micro-irrigation significantly increases water use efficiency.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

31. Consider the following statements about agricultural research institutes in Tamil Nadu.
I. TNAU is located in Coimbatore and plays a key role in crop variety development.
II. NRC for Banana is located in Tiruchirappalli.
III. The Sugarcane Breeding Institute is a state government entity under the Public Works Department.
IV. CPCRI has a regional station in Tamil Nadu focusing on plantation crops.
Which of the combinations given below is correct?
(A) I, II and IV only
(B) II, III and IV only
(C) I and III only
(D) I, II and III only
(E) Answer not known

32. Which defining feature describes the 'Uzhavar Sandhai' scheme in Tamil Nadu?
(A) A platform for national corporate companies to lease vast tracts of agricultural lands.
(B) An export processing zone dedicated to the production and shipping of organic spices.
(C) A direct marketing system for farmers to sell produce to consumers without intermediaries.
(D) A government scheme providing subsidized heavy machinery like tractors to large-scale landholders.
(E) Answer not known

33. Identify the incorrectly matched pair regarding agricultural marketing and institutions in Tamil Nadu.
(A) TANFED - Cooperative marketing of agricultural produce
(B) TNAU - Regulates the Minimum Support Price (MSP) at the national level
(C) Regulated Markets - Ensures fair price and correct weighment for farmers
(D) Uzhavar Sandhai - Eliminates intermediaries for vegetable marketing
(E) Answer not known

34. Arrange the following steps involved in the implementation of the Tamil Nadu Precision Farming Project in sequential order.
I. Identification and grouping of farmers
II. Installation of drip and fertigation systems
III. Soil testing and crop selection
IV. Harvesting and direct market linkage
Which of the following is the correct sequence?
(A) I, III, II, IV

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(E) Answer not known

50. Identify the correct statement(s) based on the Assertion (A) and Reason (R) given below:
Assertion (A): Groundnut is a major oilseed crop cultivated extensively in Tamil Nadu.
Reason (R): Groundnut fixes atmospheric nitrogen and improves soil fertility, making it ideal for crop rotation.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

51. Consider the following statements regarding cotton cultivation in Tamil Nadu.
I. Cotton is a major cash crop cultivated in the black soil regions.
II. It serves as the primary raw material for the extensive textile and handloom sector in the state.
III. Tamil Nadu produces enough cotton to meet 100% of the raw material demand of its textile mills.
IV. Extra-long staple cotton varieties like Sujata are cultivated in the state.
Which of the combinations given below is correct?
(A) I, II and IV only
(B) I and II only
(C) II, III and IV only
(D) I and III only
(E) Answer not known

52. What is the definition of "Sericulture" in the context of Tamil Nadu's agricultural allied activities?
(A) The scientific rearing of honey bees for wax and honey.
(B) The cultivation of grapes for wine production in the Cumbum valley.
(C) The commercial rearing of silkworms for the production of raw silk.
(D) The extraction of essential oils from aromatic plants.
(E) Answer not known

53. Identify the correctly matched pair regarding fruit crops and their prominent cultivation regions in Tamil Nadu.
(A) Grapes - Cumbum Valley (Theni)
(B) Apples - Thanjavur Delta
(C) Pineapples - Coastal Ramanathapuram
(D) Litchi - Arid tracts of Sivaganga
(E) Answer not known

54. Arrange the following steps of turmeric processing in Tamil Nadu in the correct sequence.
I. Boiling the rhizomes
II. Harvesting the raw rhizomes
III. Polishing the dried rhizomes
IV. Sun drying
(A) II, I, IV, III
(B) I, II, III, IV
(C) II, IV, I, III
(D) IV, I, II, III
(E) Answer not known

55. Which of the following flowers is NOT cultivated as a major commercial floriculture crop in Tamil Nadu?
(A) Jasmine (Malligai)
(B) Saffron
(C) Marigold
(D) Crossandra (Kanakambaram)
(E) Answer not known

56. Consider the following statements about vegetable and horticulture production in Tamil Nadu.
I. The Nilgiris (Ooty) is famous for temperate vegetables like cabbage, carrot, and potato.
II. Kodaikanal has a conducive climate for hill vegetables and fruits like plum and peach.
III. Tamil Nadu is one of the leading states in loose flower production in India.
IV. Horticultural crops generally offer higher returns per unit area compared to traditional field crops.
V. The state heavily discourages the cultivation of horticultural crops to prioritize only paddy.
Which of the combinations given below is incorrect?
(A) V only
(B) I and V only
(C) IV and V only

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(B) Rainfed conditions without the use of standing water in the fields.
(C) Greenhouse hydroponic systems used for high-value ornamental crops.
(D) Terrace farming conducted exclusively on steep mountain slope areas.
(E) Answer not known

43. Identify the correct statement(s) based on the Assertion (A) and Reason (R) given below:
Assertion (A): The Cauvery Delta was historically and is presently considered the granary of Tamil Nadu.
Reason (R): The intricate network of canals branching from the Cauvery river supports extensive and high-yielding paddy cultivation.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

44. Consider the following statements about the Cauvery Delta Protected Agricultural Zone Act, 2020.
I. It bans the implementation of new hydrocarbon exploration projects in the specified region.
II. It covers the entire district of Chennai.
III. It aims to protect the farming community and ensure food security.
Which of the combinations given below is correct?
(A) I and III only
(B) I and II only
(C) II and III only
(D) I only
(E) Answer not known

45. Identify the incorrectly matched pair regarding Samba paddy cultivation in Tamil Nadu.
(A) Primary water source - Southwest monsoon only
(B) Season duration - Long duration (around 130-150 days)
(C) Sowing period - Usually begins in August
(D) Yield potential - Generally higher than short-duration Kuruvai
(E) Answer not known

46. Which of the following statements is correct regarding the traditional 'Kichili Samba' rice of Tamil Nadu?
(A) Thick red rice variety used primarily for large-scale production of idli batter.
(B) Extinct variety from the 1960s that is no longer found in agricultural use.
(C) Fine-grained, tasty rice variety with relative resistance to common pests.
(D) Deep-water rice that requires continuous flooding of at least five feet depth.
(E) Answer not known

47. Select the correct sequence of districts from North to South that are prominent for banana cultivation in Tamil Nadu.
(A) Tiruchirappalli - Theni - Kanyakumari
(B) Kanyakumari - Theni - Tiruchirappalli
(C) Theni - Tiruchirappalli - Kanyakumari
(D) Tiruchirappalli - Kanyakumari - Theni
(E) Answer not known

48. Match the following crops with the districts predominantly known for their cultivation in Tamil Nadu.
List I: (Crop)
P. Groundnut
Q. Mango
R. Tapioca
S. Cotton
List II: (Predominant District)
I. Salem
II. Krishnagiri
III. Perambalur
IV. Tiruvannamalai
(A) P-II, Q-IV, R-III, S-I
(B) P-I, Q-III, R-II, S-IV
(C) P-IV, Q-II, R-I, S-III
(D) P-III, Q-II, R-I, S-IV
(E) Answer not known

49. Which of the following statements is incorrect concerning coconut cultivation in Tamil Nadu?
(A) Leading producers including Coimbatore and Tiruppur districts for coconut oils.
(B) Rainfed crop requiring very low rainfall that thrives in desert soils.
(C) Pollachi region which is famous for high-yielding farms and coir industries.
(D) Cultivation requiring well-drained soils in a warm and humid tropical climate.

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21. Match the following fisheries harbours and infrastructure with their primary locations in Tamil Nadu.
List I: (Fisheries Harbour)
P. Kasimedu
Q. Muttom
R. Tharuvaikulam
S. Mallipattinam
List II: (District Location)
I. Kanyakumari
II. Chennai
III. Thanjavur
IV. Thoothukudi
(A) P-II, Q-I, R-IV, S-III
(B) P-I, Q-II, R-III, S-IV
(C) P-II, Q-IV, R-I, S-III
(D) P-III, Q-I, R-IV, S-II
(E) Answer not known

22. In the context of Tamil Nadu's fisheries sector, which statement reflects the factual status of marine fisheries?
(A) Tamil Nadu has the longest coastline in India, making it the undisputed largest fish producer globally.
(B) Inland fisheries completely overshadow marine fisheries in terms of total export revenue.
(C) Mechanised boats have been entirely banned across the Tamil Nadu coast to protect traditional fishermen.
(D) Deep-sea fishing schemes are encouraged to reduce the fishing pressure in the Palk Bay region.
(E) Answer not known

23. Identify the correct statement(s) based on the Assertion (A) and Reason (R) given below:
Assertion (A): The promotion of deep-sea fishing among Tamil Nadu fishermen requires substantial capital subsidy from the government.
Reason (R): Deep-sea fishing vessels (like tuna longliners) involve high costs for construction, communication equipment, and advanced navigation systems.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

24. Consider the following statements about the Kangayam cattle breed in Tamil Nadu.
I. It is a famous draught breed native to the western districts.
II. It is primarily reared for producing the highest milk yield per cow in India.
III. It is culturally associated with traditional sports like Jallikattu and Rekla races.
Which of the combinations given below is correct?
(A) I and III only
(B) I and II only
(C) II and III only
(D) III only
(E) Answer not known

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25. Identify the correctly matched pair concerning aquaculture in Tamil Nadu.
(A) Shrimp farming - Mostly practiced in the hilly regions of the Nilgiris
(B) Freshwater fish ponds - Exclusively found in the arid tracts of Ramanathapuram
(C) Pearl culture - Prominently practiced in the lakes of Chennai
(D) Brackish water aquaculture - Highly concentrated in the coastal districts like Nagapattinam
(E) Answer not known

26. Which of the following statements is correct regarding the tank irrigation system in Tamil Nadu?
(A) It relies primarily on capturing and storing surface runoff during the monsoon seasons.
(B) Tank irrigation is a recent technology introduced in the 20th century.
(C) Tanks are the primary source of irrigation in the steep slopes of the Western Ghats.
(D) Tank irrigation accounts for over 90% of the total irrigated area in the state today.
(E) Answer not known

27. Select the correct sequence of major irrigation reservoirs in Tamil Nadu from North to South.
(A) Mettur - Bhavanisagar - Vaigai - Papanasam
(B) Bhavanisagar - Mettur - Papanasam - Vaigai
(C) Mettur - Vaigai - Bhavanisagar - Papanasam
(D) Papanasam - Vaigai - Bhavanisagar - Mettur
(E) Answer not known

(D) II, III and V only
(E) Answer not known

57. The concept of integrating crop cultivation with livestock, poultry, and fisheries on the same farm to maximize resource efficiency is known as:
(A) Monoculture
(B) Shifting agriculture
(C) Corporate farming
(D) Integrated Farming System (IFS)
(E) Answer not known

58. Which of the following statements is incorrect regarding sericulture in Tamil Nadu?
(A) Tamil Nadu is completely devoid of any silk processing infrastructure.
(B) Kancheepuram is a major consumer of raw silk for its handloom silk sarees.
(C) Dharmapuri and Krishnagiri are major hubs for mulberry cultivation and silkworm rearing.
(D) The Department of Sericulture provides subsidies for planting mulberry and constructing rearing sheds.
(E) Answer not known

59. What is the primary focus of the Tamil Nadu Farmers Relief Scheme as implemented by the state government?
(A) Supplying imported agricultural machinery at a premium cost.
(B) Providing debt waiver and financial compensation for crop losses due to natural calamities.
(C) Facilitating the permanent transfer of agricultural land to real estate developers.
(D) Exporting raw agricultural produce exclusively to European countries.
(E) Answer not known

60. Which example best fits the category of "Mechanised Fishing Fleet" commonly operating from harbours like Chennai and Tuticorin?
(A) Catamarans (Kattumaram)
(B) Multi-day deep-sea trawlers
(C) Coracles (Parisal)
(D) Hand-cast shore nets
(E) Answer not known

61. Match the following elements of Tamil Nadu's animal husbandry sector.
List I: (Breed Name)
P. Kangayam
Q. Bargur
R. Toda
S. Mecheri
List II: (Description)
I. Sheep breed known for meat
II. Buffalo breed of the Nilgiris
III. Draught cattle of Erode hills
IV. Draught cattle of Western Tamil Nadu
(A) P-IV, Q-III, R-II, S-I
(B) P-III, Q-IV, R-I, S-II
(C) P-IV, Q-I, R-II, S-III
(D) P-I, Q-II, R-III, S-IV
(E) Answer not known

62. Which of the following facts is true concerning the contribution of agriculture to Tamil Nadu's economy?
(A) Sector contributing more than 80% of the State's Gross Domestic Product.
(B) Sector providing employment to less than 2% of the total state population.
(C) Employment source for a significant portion of the current rural workforce.
(D) State that imports 100% of its food needs due to zero agricultural growth.
(E) Answer not known

63. Identify the correct statement(s) based on the Assertion (A) and Reason (R) given below:
Assertion (A): The adoption of Precision Farming technologies has seen a rise in districts like Dharmapuri and Krishnagiri.
Reason (R): These districts face water scarcity, and precision farming techniques like drip irrigation ensure higher yield with minimal water usage.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

64. Consider the following statements about the tank irrigation system in Tamil Nadu.
I. It is an ancient system dating back to the

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Sangam and Chola periods.
II. Tanks are classified into system tanks (fed by rivers) and non-system tanks (rainfed).
III. Tanks are completely privately owned and the government has no role in their maintenance.

Which of the combinations given below is correct?
(A) I and II only
(B) II and III only
(C) I and III only
(D) I only
(E) Answer not known

65. Identify the incorrectly matched pair regarding major irrigation projects and their primary beneficiary districts.
(A) Mettur Dam - Salem, Erode, and Delta districts
(B) Papanasam Dam - Chennai and Kancheepuram
(C) Vaigai Dam - Madurai, Dindigul, and Theni
(D) Bhavanisagar - Tiruppur and Erode
(E) Answer not known

66. Which of the following statements is correct regarding the adoption of drip and sprinkler irrigation in Tamil Nadu?
(A) Sprinkler irrigation systems recommended for paddy crops in the delta regions.
(B) Micro-irrigation which reduces fertilizer efficiency compared to soil application.
(C) Drip irrigation installations that are legally prohibited for use on sugarcane.
(D) Leading state in India for total area covered under micro-irrigation systems.
(E) Answer not known

67. Select the correct sequence of operations in a typical Tamil Nadu agricultural supply chain using cooperative marketing.
(A) Farmer harvesting - Sale to TANFED/ Cooperative Society - Value addition/ Processing - Distribution to consumers
(B) Distribution to consumers - Value addition/ Processing - Sale to TANFED - Farmer harvesting
(C) Sale to TANFED - Farmer harvesting - Distribution to consumers - Value addition/ Processing
(D) Farmer harvesting - Distribution to consumers - Sale to TANFED - Value addition/Processing
(E) Answer not known

68. Match the following ICAR/national agricultural research institutes with their locations in Tamil Nadu.
List I: (Research Institute)
P. Sugarcane Breeding Institute
Q. National Research Centre for Banana
R. Central Institute of Brackishwater Aquaculture
S. Central Potato Research Station
List II: (Location)
I. Chennai
II. Coimbatore
III. Tiruchirappalli
IV. Udhagamandalam (Ooty)
(A) P-III, Q-II, R-IV, S-I
(B) P-II, Q-I, R-III, S-IV
(C) P-II, Q-III, R-I, S-IV
(D) P-I, Q-III, R-II, S-IV
(E) Answer not known

69. Which of the following statements is incorrect regarding the Tamil Nadu Agricultural University (TNAU)?
(A) It serves as the sole regulatory authority for the import of industrial chemical fertilizers into India.
(B) It is a premier institute located in Coimbatore responsible for agricultural education and research.
(C) It releases new high-yielding varieties of crops specifically suited for the agroclimatic zones of Tamil Nadu.
(D) It provides agro-advisory services and weather forecasts to farmers.
(E) Answer not known

70. Identify the correct statement(s) based on the Assertion (A) and Reason (R) given below:
Assertion (A): The fragmentation of landholdings into small and marginal farms is a major challenge in Tamil Nadu.
Reason (R): Small farm sizes make it economically unviable to independently adopt large-scale farm mechanization.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct

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explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

71. Consider the following statements about agricultural marketing in Tamil Nadu.
I. Uzhavar Sandhai enables farmers to get better profit margins by avoiding middlemen.
II. TANFED is the apex cooperative marketing federation in the state.
III. Regulated markets charge a heavy, unregulated cess on farmers to enter the premises.
IV. The e-NAM platform integrates regulated markets to facilitate online trading.
Which of the combinations given below is correct?
(A) I, II and IV only
(B) I and II only
(C) II, III and IV only
(D) I and IV only
(E) Answer not known

72. In agricultural terminology, what defines "Net Irrigated Area" in Tamil Nadu?
(A) The area irrigated exclusively by rainfall without any artificial water supply.
(B) The total area irrigated including areas irrigated multiple times in a year.
(C) Physical area of land irrigated at least once during the agricultural year.
(D) The total volume of water stored in all state reservoirs and major dams.
(E) Answer not known

73. Identify the correctly matched pair regarding organic farming policies in Tamil Nadu.
(A) Kudimaramathu - Distribution of synthetic urea at a subsidized rate
(B) PM Fasal Bima Yojana - A scheme exclusively for corporate organic certifiers
(C) e-NAM - An organic manure production factory in Chennai
(D) Paramparagat Krishi Vikas Yojana (PKVY) - Promotion of chemical-free traditional farming
(E) Answer not known

74. Arrange the following districts in descending order of their general marine fish production in Tamil Nadu.
I. Ramanathapuram
II. Nagapattinam
III. Chennai
IV. Krishnagiri
Which of the following is the correct sequence?
(A) I, II, III, IV
(B) II, I, III, IV
(C) III, I, II, IV
(D) I, III, II, IV
(E) Answer not known

75. Which of the following is NOT an expected impact of climate change on the agriculture of Tamil Nadu?
(A) Increased frequency of droughts
(B) Enhanced frost damage in the coastal delta zone
(C) Seawater intrusion into coastal agricultural lands
(D) Shift in the traditional sowing periods
(E) Answer not known

76. Consider the following statements regarding the cropping seasons and patterns in Tamil Nadu.
I. Sornavari is a cropping season primarily falling between April and May.
II. Navarai is a season where sowing happens between December and January.
III. Paddy is universally cultivated in all districts of Tamil Nadu throughout all seasons without variation.
IV. Millets are largely confined to the dryland tracts of the western and southern zones.
V. Crop rotation is not practiced in Tamil Nadu.
Which of the combinations given below is incorrect?
(A) III and V only
(B) I, II and IV only
(C) III, IV and V only
(D) I, III, IV and V only
(E) Answer not known

77. The application of spatial data, soil sensors, and drone technology to optimize agricultural inputs in Tamil Nadu falls under the concept of:
(A) Precision agriculture
(B) Subsistence farming

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(B) I, II, III, IV
(C) III, I, II, IV
(D) II, I, III, IV
(E) Answer not known

35. Which of the following is NOT typically considered a major agricultural challenge in Tamil Nadu today?
(A) Excessive availability of uninterrupted perennial rivers
(B) Depletion of groundwater resources
(C) Severe shortage of agricultural labour
(D) Fragmentation of landholdings
(E) Answer not known

36. Consider the following statements regarding the impact of climate change on Tamil Nadu agriculture.
I. It leads to erratic and irregular rainfall patterns.
II. It increases the risk of salinity intrusion in the coastal delta regions.
III. Heat stress reduces the yield of temperature-sensitive crops.
IV. It completely eliminates the occurrence of pest and disease outbreaks.
V. It causes shifting of crop growing seasons.
Which of the combinations given below is incorrect?
(A) I, II, III and V only
(B) IV only
(C) I and IV only
(D) II, IV and V only
(E) Answer not known

37. The application of precise amounts of water and soluble fertilizers directly to the root zone to maximize yield is the core concept of:
(A) Fertigation in precision farming
(B) Dryland farming
(C) Shifting cultivation
(D) Flood irrigation
(E) Answer not known

38. Which of the following statements correctly highlights the significance of organic farming promotion in Tamil Nadu?
(A) It encourages the maximum use of synthetic urea to triple the yield.
(B) It relies heavily on genetically modified seeds for all vegetable crops.
(C) It is legally enforced as the only permissible method of farming in the state.
(D) It focuses on improving soil health through the use of natural inputs like panchagavya and jeevamrutham.
(E) Answer not known

39. Which traditional rice variety of Tamil Nadu is culturally associated with a historical test of strength where a bridegroom was required to lift a heavy stone?
(A) Seeraga Samba
(B) Mappillai Samba
(C) Kichili Samba
(D) Karuppu Kavuni
(E) Answer not known

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40. Which example best illustrates the application of Geographic Indication (GI) tags to safeguard agricultural heritage in Tamil Nadu?
(A) Tirupur Cotton Garments and Sivakasi Crackers
(B) Chennai IT Parks and Coimbatore Foundries
(C) Erode Turmeric and Madurai Malligai
(D) Kanyakumari Windmills and Tuticorin Salt
(E) Answer not known

41. Match the following agroclimatic zones of Tamil Nadu with their typical characteristic or prominent district.
List I: (Agroclimatic Zone)
P. Delta Zone
Q. Western Zone
R. High Altitude Zone
S. Southern Zone
List II: (Prominent District/Feature)
I. The Nilgiris
II. Thanjavur
III. Coimbatore
IV. Ramanathapuram
(A) P-III, Q-II, R-I, S-IV
(B) P-II, Q-IV, R-I, S-III
(C) P-I, Q-II, R-III, S-IV
(D) P-II, Q-III, R-I, S-IV
(E) Answer not known

42. Rice cultivation in Tamil Nadu is predominantly carried out under which of the following conditions?
(A) Irrigated conditions requiring standing water for much of the growth cycle.

correct?
(A) I and III only
(B) I and II only
(C) II and III only
(D) I only
(E) Answer not known

85. Identify the correctly matched pair regarding traditional rice varieties and their historical/ cultural significance in Tamil Nadu.
(A) Karuppu Kavuni - Historically known as forbidden rice, rich in anthocyanins
(B) Kichili Samba - A rice variety used exclusively for feeding cattle
(C) Mappillai Samba - A modern, lab-developed hybrid with zero cultural history
(D) Seeraga Samba - A thick red rice primarily boiled for porridge
(E) Answer not known

86. Which of the following statements is correct regarding the cropping pattern in Tamil Nadu?
(A) Food crops occupy a lesser cultivated area compared to non-food crops.
(B) The state prohibits the cultivation of commercial crops like sugarcane.
(C) Crop diversification has decreased to zero over the last two decades.
(D) Paddy is the principal crop, followed by millets, pulses, and oilseeds.
(E) Answer not known

87. Select the correct sequence of districts based on their geographic positioning from the coastal delta inwards to the western agro-climatic zone.
(A) Nagapattinam - Tiruchirappalli - Karur - Coimbatore
(B) Coimbatore - Karur - Tiruchirappalli - Nagapattinam
(C) Tiruchirappalli - Coimbatore - Nagapattinam - Karur
(D) Nagapattinam - Coimbatore - Karur - Tiruchirappalli
(E) Answer not known

88. Match the following crops with their major characteristic or industrial link in Tamil Nadu.
List I: (Crop)
P. Sugarcane
Q. Tapioca
R. Cotton
S. Coconut
List II: (Industrial Link)
I. Coir industry
II. Handloom and Textile industry
III. Cooperative Sugar Mills
IV. Sago and Starch industry
(A) P-IV, Q-III, R-I, S-II
(B) P-III, Q-I, R-II, S-IV
(C) P-III, Q-IV, R-II, S-I
(D) P-I, Q-IV, R-III, S-II
(E) Answer not known

89. Which of the following statements is incorrect regarding agricultural land use in Tamil Nadu?
(A) The area under non-agricultural uses has been steadily increasing due to urbanization.
(B) Fallow lands occupy a portion of the state's area due to fluctuating monsoon rainfall.
(C) Forest cover in the state is below the recommended 33% target.
(D) The net sown area constitutes over 80% of the total geographical area of the state.
(E) Answer not known

90. Identify the correct statement(s) based on the Assertion (A) and Reason (R) given below:
Assertion (A): The Nilgiris district focuses heavily on plantation crops like tea and coffee rather than field crops like paddy.
Reason (R): The hilly terrain and cool, humid climate of the Nilgiris are ideally suited for plantations but unsuitable for paddy cultivation.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

91. Consider the following statements about cotton cultivation in Tamil Nadu.
I. It is predominantly grown in the black soils of the southern and western districts.
II. The state has a historical link between its cotton fields and the handloom weaving clusters.
III. Bt Cotton is commercially cultivated by farmers in Tamil Nadu.
IV. Cotton is a frost-tolerant crop and is widely grown in Kodaikanal.

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134. Arrange the following sources of irrigation in Tamil Nadu in descending order based on their percentage contribution to the net irrigated area.
I. Wells and Tube wells
II. Canals
III. Tanks
Which of the following is the correct sequence?
(A) I, II, III
(B) II, I, III
(C) I, III, II
(D) III, II, I
(E) Answer not known

135. Which of the following is NOT a recognised method of micro-irrigation promoted under the Tamil Nadu Precision Farming Project?
(A) Surface drip irrigation
(B) Basin flooding
(C) Sub-surface drip irrigation
(D) Micro-sprinklers
(E) Answer not known

136. Consider the following statements about agricultural marketing and support in Tamil Nadu.
I. The Tamil Nadu State Agricultural Marketing Board regulates the trading of notified agricultural produce.
II. Minimum Support Price (MSP) operations for paddy are carried out extensively through direct procurement centres.
III. The Uzhavar Sandhai scheme has been entirely abolished since 2015.
IV. e-NAM connects physical agricultural markets online across the state.
V. Cold storage facilities are provided in regulated markets to reduce post-harvest losses.
Which of the combinations given below is incorrect?
(A) III only
(B) I and III only
(C) IV and V only
(D) II, III and V only
(E) Answer not known

137. The economic concept where farmers consolidate their fragmented lands or operations voluntarily to achieve economies of scale and better bargaining power in the market is referred to as:
(A) Corporate farming
(B) Contract farming
(C) Subsistence farming
(D) Cooperative farming / Farmer Producer Organisations (FPOs)
(E) Answer not known

138. Which of the following is an exception to the general crops grown in the delta agro-climatic zone of Tamil Nadu?
(A) Apple
(B) Paddy
(C) Black gram
(D) Green gram
(E) Answer not known

139. What is the primary function of the Tamil Nadu Civil Supplies Corporation (TNCSC) in relation to agriculture?
(A) Agency responsible for the export of spices to international foreign markets.
(B) Nodal agency for the procurement of paddy at the Minimum Support Price.
(C) Manufacturer of diverse chemical fertilizers for use across the state regions.
(D) Institute that conducts agricultural research and releases various crop varieties.
(E) Answer not known

140. Which agricultural category correctly encompasses the production of crops like Jasmine, Rose, and Marigold, for which Tamil Nadu holds a leading position nationally?
(A) Pomology
(B) Floriculture
(C) Olericulture
(D) Silviculture
(E) Answer not known

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(B) Provision of free agricultural land to landless rural labourers statewide.
(C) Mechanism to export agricultural surplus to neighboring states and regions.
(D) Mandate for the compulsory purchase of crop insurance from private firms.
(E) Answer not known

100. Which of the following is a classic example of an inland fishing harbour or major landing centre in Tamil Nadu?
(A) Kasimedu
(B) Tuticorin Port
(C) Mettur Dam Reservoir
(D) Muttom
(E) Answer not known

101. Match the following water sources with their corresponding type of irrigation system prevalent in Tamil Nadu.
List I: (Water Source)
P. Mettur Dam
Q. Dug wells
R. Eris (Tanks)
S. Deep borewells
List II: (Irrigation Type)
I. Canal irrigation
II. Groundwater (shallow) irrigation
III. Surface runoff harvesting
IV. Groundwater (deep) irrigation
(A) P-I, Q-II, R-III, S-IV
(B) P-II, Q-I, R-IV, S-III
(C) P-III, Q-IV, R-I, S-II
(D) P-I, Q-III, R-II, S-IV
(E) Answer not known

102. Which of the following is a factual statement regarding aquaculture in Tamil Nadu?
(A) Shrimp farming is completely banned across all coastal districts.
(B) Aquaculture produces only ornamental fish and contributes nothing to food security.
(C) Tamil Nadu lacks any research institute dedicated to brackishwater aquaculture.
(D) Brackishwater aquaculture is prominently practiced in coastal districts like Nagapattinam and Tiruvallur.
(E) Answer not known

103. Identify the correct statement(s) based on the Assertion (A) and Reason (R) given below:
Assertion (A): The Tamil Nadu government heavily promotes the use of solar-powered pump sets for agriculture.
Reason (R): Solar pumps reduce the burden of free agricultural electricity on the state grid and ensure reliable daytime power for irrigation.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

104. Consider the following statements regarding agricultural irrigation in Tamil Nadu.
I. Tank irrigation is concentrated largely in districts like Kancheepuram, Tiruvannamalai, and Sivaganga.
II. Canal irrigation accounts for the highest percentage of the net irrigated area compared to well irrigation.
III. Well irrigation (including tube wells) is the predominant source of irrigation in the state.
Which of the combinations given below is correct?
(A) I and II only
(B) I and III only
(C) II and III only
(D) I only
(E) Answer not known

105. Identify the correctly matched pair regarding the historical significance of tank irrigation.
(A) Eriyadi - A modern government tax on borewells
(B) Grand Anicut (Kallanai) - A modern dam built by the British in 1947
(C) System tanks - Tanks that rely entirely on local rainfall without river connections
(D) Kudimaramathu - Community participation in the maintenance and desilting of water bodies
(E) Answer not known

106. Which of the following statements is correct regarding the major irrigation projects of Tamil Nadu?
(A) The Bhavanisagar Dam is an earthen dam located in the Erode district.

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Which of the combinations given below is correct?
(A) I, II and III only
(B) II, III and IV only
(C) I and IV only
(D) I and II only
(E) Answer not known

92. In Tamil Nadu, the term "Kuruvai" structurally defines:
(A) A long-duration sugarcane crop.
(B) A short-duration paddy crop traditionally sown between June and July.
(C) A specialized method of catching marine fish.
(D) A cooperative credit society for rural weavers.
(E) Answer not known

93. Identify the incorrectly matched pair regarding GI tags associated with Tamil Nadu.
(A) Thanjavur - Tapioca Starch
(B) Erode - Turmeric
(C) Madurai - Malligai (Jasmine)
(D) Kodaikanal - Malai Poondu (Hill Garlic)
(E) Answer not known

94. Arrange the following traditional rice varieties of Tamil Nadu based on their general morphological grain size, from the smallest (finest) to the larger/thicker varieties.
I. Seeraga Samba
II. Kichili Samba
III. Mappillai Samba
Which of the following is the correct sequence?
(A) I, II, III
(B) III, II, I
(C) II, I, III
(D) I, III, II
(E) Answer not known

95. Which of the following is NOT a characteristic feature of the Uzhavar Sandhai system in Tamil Nadu?
(A) Free weighing scales provided to farmers.
(B) Prices fixed daily based on prevailing wholesale market rates.
(C) Direct interaction between farmers and consumers.
(D) Presence of commission agents to facilitate sales.
(E) Answer not known

96. Consider the following statements about fisheries in Tamil Nadu.
I. Tamil Nadu has one of the longest coastlines in India, spanning over 1,000 km.
II. Inland fisheries are entirely banned to protect freshwater drinking sources.
III. Rameswaram and Nagapattinam are critical coastal nodes for marine fishing.
IV. The seasonal fishing ban on the east coast is implemented to allow fish breeding.
V. Pearl fishery was historically prominent in the Gulf of Mannar region.
Which of the combinations given below is incorrect?
(A) I, III and IV only
(B) II only
(C) II, III and V only
(D) I, II, IV and V only
(E) Answer not known

97. The process of transitioning from traditional, chemical-intensive farming back to ecological methods utilizing cow dung and urine formulations like Jeevamrutham in Tamil Nadu is conceptually termed:
(A) Hydroponics
(B) Natural / Organic farming
(C) Aeroponics
(D) Shifting cultivation
(E) Answer not known

98. Which of the following statements correctly describes the significance of the Kangayam breed in Tamil Nadu's agricultural landscape?
(A) Milch breed capable of producing over 30 liters of milk every day.
(B) Sheep breed known for producing high-quality wool for the textile industry.
(C) Exotic crossbreed introduced from Australia during the late 1990s decade.
(D) Robust draught breed historically used for ploughing in western districts.
(E) Answer not known

99. What is the primary objective of the "Tamil Nadu Farmers Relief Scheme" regarding crop losses?
(A) Financial compensation for farmers affected by floods or severe drought.

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(E) Answer not known

113. Identify the incorrectly matched pair regarding organic farming initiatives in Tamil Nadu.
(A) Jeevamrutham - A liquid organic manure used to enhance soil microflora
(B) Nammazhwar - A renowned agricultural scientist who exclusively promoted genetically modified crops
(C) Panchagavya - A traditional organic blend of five cow products used as a growth promoter
(D) Vermicompost - Organic fertilizer produced using earthworms
(E) Answer not known

114. Arrange the following districts in descending order based on their typical contribution to total inland fish production in Tamil Nadu.
I. Kancheepuram (including Chengalpattu)
II. Vellore (including Ranipet/Tupattur)
III. Chennai (urban, least inland waters)
Which of the following is the correct sequence?
(A) I, II, III
(B) II, I, III
(C) III, I, II
(D) I, III, II
(E) Answer not known

115. Which of the following is NOT a prominent feature of the Tamil Nadu Precision Farming Project?
(A) Complete banning of high-yielding vegetable seeds
(B) Promotion of drip irrigation
(C) Promotion of fertigation
(D) Formation of farmer clusters for better market negotiation
(E) Answer not known

116. Consider the following statements regarding the impact of climate change on Tamil Nadu agriculture.
I. Rising temperatures can shorten the growing period of certain crops, reducing yield.
II. The intensity and frequency of cyclonic storms affecting the delta region have increased.
III. Coastal agricultural lands face the threat of seawater inundation and soil salinity.
IV. Climate change uniformly increases the crop yield across all agro-climatic zones.
V. Unpredictable monsoon patterns disrupt traditional sowing schedules.
Which of the combinations given below is incorrect?
(A) IV only
(B) I and IV only
(C) II, III and V only
(D) I, II, III and V only
(E) Answer not known

117. The geographical phenomenon where agricultural lands near the coast suffer from the influx of seawater, severely degrading soil fertility and crop yield, is conceptually known as:
(A) Salinity intrusion
(B) Waterlogging
(C) Desertification
(D) Laterization
(E) Answer not known

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118. Which of the following statements is incorrect regarding the agricultural workforce in Tamil Nadu?
(A) There is a noticeable trend of feminization in agriculture, with a high proportion of women participating as agricultural labourers.
(B) The state faces a severe shortage of agricultural labour during peak seasons like harvesting.
(C) Rural youth are increasingly migrating away from agriculture towards the manufacturing and service sectors.
(D) Agriculture guarantees the highest per capita income among all primary, secondary, and tertiary sectors in the state.
(E) Answer not known

119. What is the specific characteristic of the Tamil Nadu Land Reforms (Fixation of Ceiling on Land) Act?
(A) It mandates that all agricultural land must be owned by the State.
(B) It fixed a ceiling on the extent of agricultural land a family can hold to promote equitable distribution.
(C) It abolished the cultivation of non-food crops.
(D) It restricts agricultural operations only to

(B) The Mettur Dam was constructed across the river Vaigai.
(C) The Papanasam Dam serves the agricultural needs of the northern coastal districts.
(D) The state completely lacks any canal network due to its rocky terrain.
(E) Answer not known

107. Select the correct chronological arrangement of the establishment of the following institutions/ projects in Tamil Nadu.
I. Construction of the Grand Anicut (Kallanai)
II. Construction of the Mettur Dam
III. Establishment of Tamil Nadu Agricultural University (TNAU)
(A) I, II, III
(B) II, I, III
(C) I, III, II
(D) III, II, I
(E) Answer not known

108. Match the following ICAR institutions with their core research focus areas relevant to Tamil Nadu.
List I: (Institution)
P. CPCRI (Regional Station)
Q. Sugarcane Breeding Institute
R. NRC Banana
S. CIBA
List II: (Research Focus)
I. Plantation crops like coconut and arecanut
II. Development of new sugarcane varieties
III. Banana production and post-harvest technology
IV. Brackishwater aquaculture
(A) P-II, Q-I, R-IV, S-III
(B) P-I, Q-II, R-III, S-IV
(C) P-III, Q-IV, R-I, S-II
(D) P-I, Q-III, R-II, S-IV
(E) Answer not known

109. Which of the following statements is incorrect regarding agricultural research in Tamil Nadu?
(A) The state relies entirely on foreign research institutions for developing pest-resistant cotton.
(B) TNAU has released numerous high-yielding crop varieties tailored to the state's diverse agro-climatic zones.
(C) KVKs (Krishi Vigyan Kendras) play a crucial role in transferring technology from research labs to farmers.
(D) The Sugarcane Breeding Institute in Coimbatore has a legacy of developing prominent 'Co' varieties of sugarcane.
(E) Answer not known

110. Identify the correct statement(s) based on the Assertion (A) and Reason (R) given below:
Assertion (A): The Tamil Nadu government provides crop loss compensation directly to the bank accounts of affected farmers.
Reason (R): Direct Benefit Transfer (DBT) eliminates middlemen and ensures transparent and timely financial relief.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

111. Consider the following statements regarding the Uzhavar Sandhai scheme.
I. It was established to ensure farmers get better prices by eliminating middlemen.
II. It helps consumers purchase fresh vegetables at prices lower than the retail market.
III. It strictly prohibits the sale of any agricultural produce other than highly processed, packaged foods.
IV. Transport facilities are often subsidized for farmers to bring their produce to these markets.
Which of the combinations given below is correct?
(A) I, II and IV only
(B) II, III and IV only
(C) I and III only
(D) I and II only
(E) Answer not known

112. The cooperative marketing network in Tamil Nadu, structurally headed by an apex body to facilitate the supply of agricultural inputs like fertilizers and the procurement of outputs, is defined as:
(A) NABARD
(B) AAVIN
(C) TANFED
(D) TANTEA

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127. Select the correct sequence of districts in descending order of their general groundnut production in Tamil Nadu.
I. Tiruvannamalai
II. Vellore
III. Chennai
(A) I, II, III
(B) II, I, III
(C) III, I, II
(D) I, III, II
(E) Answer not known

128. Match the following major horticulture/ vegetable crops with their predominant producing districts in Tamil Nadu.
List I: (Crop)
P. Tapioca
Q. Mango
R. Turmeric
S. Jasmine
List II: (Producing District)
I. Erode
II. Madurai
III. Salem
IV. Krishnagiri
(A) P-IV, Q-III, R-II, S-I
(B) P-III, Q-I, R-IV, S-II
(C) P-III, Q-IV, R-I, S-II
(D) P-I, Q-II, R-III, S-IV
(E) Answer not known

129. Which of the following statements is incorrect regarding the cultivation of millets in Tamil Nadu?
(A) Millets like Cholam (Sorghum) and Kambu (Pearl Millet) are primarily grown under rainfed conditions.
(B) Millets require double the amount of water compared to wetland paddy.
(C) The state has launched special missions to increase the area under nutri-cereals.
(D) Ragi is extensively cultivated in the Dharmapuri and Krishnagiri districts.
(E) Answer not known

130. Identify the correct statement(s) based on the Assertion (A) and Reason (R) given below:
Assertion (A): Sericulture provides regular and high income to farmers in districts like Dharmapuri and Krishnagiri.
Reason (R): Mulberry, the food plant of the silkworm, can be harvested multiple times a year, allowing for continuous silkworm rearing.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

131. Consider the following statements regarding the marine fisheries sector in Tamil Nadu.
I. Tuticorin and Chennai are major fishing harbours equipped for deep-sea vessels.
II. The state actively promotes replacing traditional trawlers with deep-sea tuna longliners.
III. The Gulf of Mannar region is ecologically sensitive, leading to regulated fishing practices.
IV. Marine fish production is completely independent of seasonal monsoons and ocean currents.
Which of the combinations given below is correct?
(A) I, II and III only
(B) I, II and IV only
(C) II, III and IV only
(D) I and III only
(E) Answer not known

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132. The process of breeding, rearing, and harvesting aquatic organisms in controlled environments such as ponds or tanks in Tamil Nadu is formally defined as:
(A) Capture fisheries
(B) Deep-sea trawling
(C) Aquaculture
(D) Pelagic fishing
(E) Answer not known

133. Identify the incorrectly matched pair regarding animal husbandry in Tamil Nadu.
(A) Aseel - A high-yielding commercial dairy cow
(B) Kangayam - Draught cattle breed
(C) Mecheri - Sheep breed known for meat quality
(D) Toda - Buffalo breed of the Nilgiris
(E) Answer not known

recognized for producing a unique and flavorful variety of hill banana.

9. (D) Kichili Samba has a high glycemic index and is heavily polished before consumption.
Traditional rice varieties in Tamil Nadu are generally characterized by their resilience and nutritional benefits. Mappillai Samba and Kullakar offer high antioxidant properties and require minimal chemical inputs compared to modern hybrids. While Kichili Samba is a fine-grained variety preferred for its taste, it is not traditionally associated with a high glycemic index or excessive polishing that diminishes its value.

10. (C) A is true but R is false.
Theni and Tiruchirappalli are major centers for banana production in Tamil Nadu, benefiting from fertile soils and adequate water supply. However, bananas are tropical fruits that require a warm and humid climate to thrive. The claim that snowfall and a cool temperate environment are essential for fruit setting is inaccurate, as such conditions would actually be detrimental to banana cultivation.

11. (A) I, II and IV only
Sugarcane is a significant commercial crop in Tamil Nadu, characterized as an annual plant requiring substantial irrigation. The state supports this sector through a network of cooperative sugar mills that handle procurement and processing. Furthermore, Coimbatore hosts the prestigious Sugarcane Breeding Institute. Unlike millets, sugarcane is rarely grown under strictly rainfed conditions due to its high water requirement during the cycle.

12. (B) Physical area of land where crops are sown and harvested during an agricultural year.
Net Sown Area represents the actual physical extent of land used for growing crops and orchards during an agricultural year. This metric accounts for the land only once, even if multiple crops are harvested from the same plot within the same period. It is a critical indicator for assessing the agricultural productivity and land utilization patterns within the state boundaries.

13. (A) Namakkal - Jasmine
Several districts in Tamil Nadu have specialized in specific agricultural commodities. Coimbatore is a major hub for coconut production, while Krishnagiri leads in mango cultivation. Salem is famous for its intensive tapioca and sago industries. However, Namakkal is primarily renowned for its poultry sector and eggs rather than jasmine, which is the hallmark commercial floral crop of the Madurai region.

14. (A) I, IV, II, III
Cotton cultivation in Tamil Nadu is concentrated in specific districts with suitable soil and climate. Perambalur and Virudhunagar are leading contributors to the total cotton area, followed by Salem. Conversely, Chennai is a completely urbanized district with virtually no agricultural land available for commercial cotton farming. The sequence highlights the geographic distribution of textile-related raw material production in the state.

15. (D) Thanjavur
The industrial processing of tapioca into sago and starch is a major economic activity in the northwestern districts of Tamil Nadu. Salem, Namakkal, and Dharmapuri host numerous processing units due to high local production levels. In contrast, Thanjavur is situated in the delta region and focuses predominantly on paddy and pulses, with very limited involvement in large-scale tapioca processing.

16. (C) II and V only
Mango cultivation is a key horticultural activity, especially in Krishnagiri and the northwestern zone. While Banganapalli and Totapuri are widely grown, Alphonso is not the only variety exported from the state. Additionally, mango trees require well-drained soils to prevent root rot and cannot thrive in heavily waterlogged clay conditions. Therefore, statements regarding export exclusivity and soil preferences are incorrect.

17. (B) Drip irrigation
Drip irrigation is a modern agricultural technique designed to maximize water efficiency by delivering water directly to the plant root zone. This method involves a network of pipes and emitters that release water at a slow, controlled

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ANSWERS

1. (B) P-II, Q-I, R-IV, S-III
Tamil Nadu agriculture follows specific cropping seasons defined by monsoon patterns. Kuruvai is a short-duration crop sown during June and July. Samba, the long-duration season, typically starts in August and continues until January. Pishanam corresponds to September or October, while Navarai is the winter season beginning in December or January. These schedules optimize water usage from varying monsoons.

2. (D) It is around 20 percent, which is lower than the required national ecological mandate.
The National Forest Policy targets a forest cover of thirty-three percent for ecological stability. However, Tamil Nadu currently maintains a forest cover of approximately twenty percent of its total geographical area. This figure remains significantly below the national mandate. Continuous efforts through afforestation and conservation programs are necessary to bridge the gap and ensure sustainable environmental health across the state.

3. (C) A is true but R is false.
The western agroclimatic zone of Tamil Nadu encompasses districts like Coimbatore and Erode, which are indeed favorable for commercial crops including sugarcane and turmeric. However, this region does not receive the highest rainfall from the retreating northeast monsoon. Instead, it relies on a mix of seasonal rains and well-developed irrigation systems, whereas coastal regions receive higher northeast monsoon totals.

4. (A) I and II only
Kuruvai serves as a vital short-duration rice season in the Cauvery delta, beginning with the release of water from reservoirs. Samba is the principal long-duration cropping season that depends heavily on rainfall provided by the northeast monsoon for successful cultivation. Conversely, Navarai is a winter season rather than a summer one, typically spanning from December through the early months of the year.

5. (A) Mappillai Samba - Red rice variety known for enhancing physical strength
Mappillai Samba is a traditional red rice variety deeply rooted in the cultural heritage of Tamil Nadu. It is historically celebrated for its ability to enhance physical stamina and overall health. Other traditional varieties like Kichili Samba are fine-grained and tasty, while Kullakar is known for drought resistance. These indigenous grains are prized today for their superior nutritional profile.

6. (D) It is known as the granary of Tamil Nadu due to its dominant paddy cultivation.
The Cauvery delta region is widely recognized as the granary of Tamil Nadu due to its intensive and successful paddy cultivation. The fertile alluvial soil and the extensive network of canals branching from the Cauvery river create an ideal environment for rice production. This region plays a central role in ensuring food security and sustaining the agricultural economy of the state.

7. (B) Public protests against hydrocarbon projects - Notification of the Special Zone - Enactment of Protected Agricultural Zone Act
The establishment of the Cauvery Delta Special Agricultural Zone followed a specific sequence of socio-political events. Initially, large-scale public protests emerged against proposed hydrocarbon and methane extraction projects to protect agricultural interests. Following these movements, the government notified the special zone to prioritize farming. This process culminated in the formal enactment of the Protected Agricultural Zone Act in twenty-twenty.

8. (C) P-II, Q-IV, R-I, S-III
Geographical Indication tags protect the unique identity of regional products. Erode is globally famous for its turmeric, which is valued for high curcumin content. Madurai is synonymous with the fragrant Jasmine flower, known locally as Malligai. Kodaikanal is celebrated for its distinctive hill garlic, while the Sirumalai hills are

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registered corporate companies.
(E) Answer not known

120. Which crop exemplifies a "Plantation Crop" extensively grown in the High Altitude Zones of Tamil Nadu?
(A) Paddy
(B) Groundnut
(C) Tea
(D) Cotton
(E) Answer not known

121. Match the following cropping seasons of Tamil Nadu with their typical harvesting months.
List I: (Cropping Season)
P. Kuruvai
Q. Samba
R. Navarai
S. Pishanam
List II: (Harvesting Months)
I. September to October
II. January to February
III. April to May
IV. February to March
(A) P-II, Q-I, R-IV, S-III
(B) P-III, Q-IV, R-I, S-II
(C) P-I, Q-III, R-II, S-IV
(D) P-I, Q-II, R-III, S-IV
(E) Answer not known

122. Which of the following facts is true regarding rice cultivation in Tamil Nadu?
(A) Tamil Nadu ranks consistently among the top five rice-producing states in India.
(B) Rice cultivation is strictly limited to the winter season.
(C) The state cultivates only aromatic basmati rice for export.
(D) Rice yield per hectare in Tamil Nadu is the lowest in the country.
(E) Answer not known

123. Identify the correct statement(s) based on the Assertion (A) and Reason (R) given below:
Assertion (A): The cultivation of traditional rice varieties is seeing a revival in Tamil Nadu.
Reason (R): Increasing consumer awareness about the health benefits and nutritional value of these indigenous varieties drives market demand.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

124. Consider the following statements regarding the traditional rice varieties of Tamil Nadu.
I. Mappillai Samba is a red rice variety with a low glycemic index.
II. Kichili Samba is known for its relatively fine grain compared to other traditional red rice.
III. These traditional varieties are highly susceptible to pests and require massive pesticide application.
Which of the combinations given below is correct?
(A) I and II only
(B) II and III only
(C) I and III only
(D) I only
(E) Answer not known

125. Identify the correctly matched pair regarding major banana cultivating districts in Tamil Nadu.
(A) Theni - Known for large-scale cultivation and diverse varieties like G-9 and Nendran
(B) Chennai - The largest exporter of hill bananas
(C) Ramanathapuram - Famous for naturally occurring wild bananas in desert soils
(D) Nilgiris - The only district where banana cultivation is officially banned
(E) Answer not known

126. Which of the following statements is correct regarding sugarcane cultivation in Tamil Nadu?
(A) Sugarcane is a short-duration crop that is harvested within three months of planting.
(B) The sugar recovery rate in Tamil Nadu is significantly higher than in Maharashtra.
(C) The state has one of the highest productivity rates (yield per hectare) of sugarcane in India.
(D) Cooperative sugar mills in the state operate without any government administrative oversight.
(E) Answer not known

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rate. It is particularly effective in water-scarce regions of Tamil Nadu, as it significantly reduces evaporation and runoff compared to traditional irrigation.

18. (D) Erode turmeric possesses a GI tag owing to its high curcumin content and distinct colour.
Erode is widely recognized for its high-quality turmeric production, which continues to be a staple of the local economy. The product has been granted a Geographical Indication tag due to its unique characteristics, including high curcumin content and a distinct golden-yellow color. This legal recognition ensures the protection of its regional identity and helps farmers achieve better prices in markets.

19. (A) The Geographical Indications of Goods Act
The unique regional identity of Madurai Malligai is protected under the Geographical Indications of Goods Act. This jasmine variety is famous for its thick petals, vibrant white color, and long-lasting fragrance that persists even after processing. The GI tag prevents the unauthorized use of the name and ensures that the traditional farmers of the Madurai region benefit from its fame.

20. (C) Millets like Kambu, Cholam, and Ragi
The Nutri-Cereals Mission focuses on reviving the cultivation and consumption of millets such as Kambu, Cholam, and Ragi. These crops are highly suitable for the dryland regions of Tamil Nadu because they are drought-resilient and require minimal water. Promoting millets addresses both nutritional security and the need for sustainable farming practices in areas with limited irrigation or erratic rainfall.

21. (A) P-II, Q-I, R-IV, S-III
Tamil Nadu features a robust network of fisheries infrastructure along its coastline. Kasimedu is the primary fishing hub in Chennai, while Muttom serves the Kanyakumari district. Tharuvaikulam is a significant landing center in Thoothukudi, and Mallipattinam supports the fishing community in Thanjavur. These harbours provide essential facilities for both traditional and mechanised fishing vessels, contributing significantly to the state marine economy.

22. (D) Deep-sea fishing schemes are encouraged to reduce the fishing pressure in the Palk Bay region.
In the marine fisheries sector, the government encourages deep-sea fishing schemes to divert fishing pressure away from the sensitive Palk Bay region. While Tamil Nadu has a significant coastline, it is not the largest producer globally. Mechanised boats are regulated but not entirely banned. Furthermore, marine fisheries remain a vital source of export revenue, though inland fisheries are also growing.

23. (A) Both A and R are true and R is the correct explanation of A.
Transitioning to deep-sea fishing requires substantial financial investment from the government in the form of capital subsidies. This is because modern deep-sea vessels, such as tuna longliners, are equipped with advanced navigation, communication systems, and specialized gear that are expensive to build and maintain. Such support is essential to help traditional fishermen venture into deeper waters and improve their livelihoods.

24. (A) I and III only
The Kangayam is a renowned draught cattle breed native to the western districts of Tamil Nadu, particularly Erode and Tiruppur. While it is not known for high milk production, it is highly valued for its strength and endurance in agricultural labor. Culturally, the breed is inextricably linked to traditional sports such as Jallikattu and Rekla races, representing pastoral heritage.

25. (D) Brackish water aquaculture - Highly concentrated in the coastal districts like Nagapattinam
Aquaculture in Tamil Nadu is diverse and adapted to different geographical environments. Brackish water aquaculture, particularly shrimp farming, is highly concentrated in coastal districts like Nagapattinam where saline water is readily available. In contrast, freshwater fish ponds are common in inland areas with perennial water sources, while pearl culture is traditionally associated with the coastal waters of the Gulf of Mannar.

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26. (A) It relies primarily on capturing and storing surface runoff during the monsoon seasons.
Tank irrigation is an ancient and traditional system in Tamil Nadu that relies on capturing and storing surface runoff during the monsoon seasons. These water bodies, often referred to as Eris, have been a cornerstone of rural agriculture for centuries. Unlike modern borewells, tanks provide a communal water source that helps in groundwater recharge and sustains local farming during dry periods.

27. (A) Mettur - Bhavanisagar - Vaigai - Papanasam
The major irrigation reservoirs in Tamil Nadu follow a distinct geographic distribution from north to south. The Mettur Dam on the Cauvery is located in the northern-central region. Moving southwards, one finds the Bhavanisagar Dam in Erode, followed by the Vaigai Dam in the Madurai region. The Papanasam Dam is situated further south in the Tirunelveli district, completing the sequence.

28. (B) P-II, Q-III, R-IV, S-I
Tamil Nadu irrigation infrastructure is built across several major rivers to support agriculture. The Mettur Dam is the largest structure on the Cauvery river. The Bhavanisagar Dam is constructed across the Bhavani, a major tributary of the Cauvery. The Vaigai Dam manages the waters of the Vaigai river, while the Papanasam Dam is built across the perennial Thamirabarani river in the south.

29. (A) Tamil Nadu relies equally on the southwest and northeast monsoons for its canal irrigation networks.
Irrigation in Tamil Nadu is dominated by groundwater from wells, which constitutes the largest share of the net irrigated area. While the state has promoted micro-irrigation and projects like Periyar-Vaigai are vital, canal irrigation depends more heavily on water stored during the southwest monsoon in major reservoirs. The reliance on the two monsoons is not equal for canal networks.

30. (A) Both A and R are true and R is the correct explanation of A.
To address the challenges of being a water-deficit state, the Tamil Nadu government offers up to one hundred percent subsidies for small and marginal farmers to install drip irrigation systems. This policy aims to encourage the adoption of micro-irrigation technologies that significantly enhance water use efficiency. By reducing wastage, these systems ensure that limited water resources can support sustainable production.

31. (A) I, II and IV only
Tamil Nadu hosts several premier agricultural research institutes that drive innovation. The Tamil Nadu Agricultural University in Coimbatore and the National Research Centre for Banana in Tiruchirappalli are key institutions. Additionally, the Central Plantation Crops Research Institute maintains a presence in the state. However, the Sugarcane Breeding Institute is a central entity under ICAR, not a state government department.

32. (C) A direct marketing system for farmers to sell produce to consumers without intermediaries.
Uzhavar Sandhai is a unique direct marketing scheme implemented in Tamil Nadu to benefit both farmers and consumers. It provides a platform where farmers can sell their fresh produce directly to the public without the involvement of intermediaries or commission agents. This system ensures that farmers receive better prices for their hard work while consumers get quality vegetables at reasonable rates.

33. (B) TNAU - Regulates the Minimum Support Price (MSP) at the national level
Various institutions support the agricultural sector in Tamil Nadu through marketing and regulation. TANFED handles cooperative marketing, while regulated markets ensure fair pricing and accurate weighing. Uzhavar Sandhai facilitates direct vegetable sales. However, the Tamil Nadu Agricultural University is an educational and research institution; it does not have the authority to regulate the Minimum Support Price at the national level.

34. (A) I, III, II, IV
The implementation of precision farming follows a logical progression to ensure success. The process begins with the identification and grouping of interested farmers into clusters. This is followed by scientific soil testing to determine suitable crop selection. Once planned, the necessary drip and fertigation infrastructure is installed. Finally, the cycle concludes with the

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harvesting of produce and establishing direct linkages to markets.

35. (A) Excessive availability of uninterrupted perennial rivers
Agriculture in Tamil Nadu faces several structural challenges, including the depletion of groundwater resources and a shortage of farm labor. The fragmentation of landholdings further complicates the adoption of modern technology. However, the state does not suffer from an excessive availability of perennial rivers; in fact, the lack of perennial water sources is a primary constraint for most farmers.

36. (B) IV only
Climate change poses significant risks to agriculture in Tamil Nadu, including erratic rainfall, salinity intrusion, and shifting growing seasons. Heat stress also negatively impacts crop yields. It is incorrect to suggest that climate change eliminates pest and disease outbreaks; on the contrary, changing environmental conditions often lead to the emergence of new pests and more frequent outbreaks, complicating crop management.

37. (A) Fertigation in precision farming
Fertigation is a core component of precision farming that involves the simultaneous application of water and soluble fertilizers through an irrigation system. By delivering nutrients directly to the root zone in precise amounts, this method ensures optimal plant growth and minimizes fertilizer wastage. It is a highly efficient practice that helps farmers in Tamil Nadu achieve higher yields while conserving precious resources.

38. (D) It focuses on improving soil health through the use of natural inputs like panchagavya and jeevamrutham.
Organic farming promotion in Tamil Nadu focuses on enhancing soil health and sustainability by using natural inputs. Techniques involve the application of traditional formulations like panchagavya and jeevamrutham instead of synthetic chemicals. This approach aims to produce healthier food, protect the environment from pollution, and reduce the dependency of farmers on expensive external inputs like chemical fertilizers and pesticides.

39. (B) Mappillai Samba
Mappillai Samba is a traditional rice variety steeped in Tamil folklore and cultural history. It is famously associated with a test of strength where a prospective bridegroom had to lift a heavy, round stone to prove his physical fitness for marriage. Consuming this nutrient-rich red rice was believed to provide the necessary stamina and power to successfully complete this challenge.

40. (C) Erode Turmeric and Madurai Malligai
The application of Geographical Indication tags is a key strategy for safeguarding the agricultural heritage of Tamil Nadu. Notable examples include Erode Turmeric, known for its quality, and Madurai Malligai, famous for its scent. These tags provide legal protection against imitation and help preserve the unique traditional methods and regional characteristics associated with these world-renowned and localized agricultural products.

41. (D) P-II, Q-III, R-I, S-IV
Tamil Nadu is divided into several agro-climatic zones based on soil and climate characteristics. The Delta Zone is represented by Thanjavur, while the Western Zone includes Coimbatore. The High Altitude Zone covers the hilly Nilgiris, and the Southern Zone encompasses districts like Ramanathapuram. Each zone has specific cropping patterns and agricultural practices tailored to its unique environmental conditions and water.

42. (A) Irrigated conditions requiring standing water for much of the growth cycle.
Rice cultivation in Tamil Nadu is predominantly an irrigated activity that requires standing water throughout most of the crop growth cycle. While some rainfed cultivation exists, the majority of the state paddy is grown in wetlands fed by canals, tanks, or wells. This intensive water requirement makes the crop highly dependent on the timely availability of irrigation from reservoirs.

43. (A) Both A and R are true and R is the correct explanation of A.
The Cauvery Delta has earned its reputation as the granary of Tamil Nadu due to its high agricultural output. This status is supported by an intricate network of ancient and modern

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62. (C) Employment source for a significant portion of the current rural workforce.
Agriculture remains a vital pillar of Tamil Nadu economy, serving as the primary source of employment for a significant portion of the rural workforce. While its percentage contribution to the State Gross Domestic Product has decreased over time due to industrialization, it still supports millions of livelihoods. The state continues to achieve substantial agricultural growth, making it largely self-sufficient in food.

63. (A) Both A and R are true and R is the correct explanation of A.
Precision farming technologies have gained significant traction in districts like Dharmapuri and Krishnagiri. These areas often face water scarcity, making traditional flood irrigation unsustainable. By adopting precision techniques such as drip irrigation and fertigation, farmers can ensure higher crop yields with minimal water consumption. This technological shift has transformed the agricultural landscape of these regions, improving overall productivity and income.

64. (A) I and II only
The tank irrigation system is an ancient water management practice in Tamil Nadu, dating back to the Sangam and Chola periods. Tanks are categorized into system tanks, which are fed by rivers, and non-system tanks, which depend on local rainfall. These water bodies are generally considered public or community resources, and the government plays an active role in their maintenance.

65. (B) Papanasam Dam - Chennai and Kancheepuram
Major irrigation projects in Tamil Nadu serve specific regional needs. The Mettur Dam is crucial for the Cauvery delta, while the Vaigai Dam supports Madurai and Theni. The Bhavanisagar Dam provides water to Erode and Tiruppur. However, the Papanasam Dam is located in the southern district of Tirunelveli and does not serve the northern coastal districts like Chennai and Kancheepuram.

66. (D) Leading state in India for total area covered under micro-irrigation systems.
Tamil Nadu has emerged as a leading state in India for the adoption of micro-irrigation systems, including both drip and sprinkler technologies. These methods are promoted because they enhance fertilizer efficiency and significantly reduce water consumption. While drip irrigation is highly recommended for crops like sugarcane, sprinkler systems are generally more suited for closely spaced crops rather than wetland paddy.

67. (A) Farmer harvesting - Sale to TANFED/ Cooperative Society - Value addition/Processing - Distribution to consumers
The agricultural supply chain through cooperatives in Tamil Nadu follows a structured path to ensure efficiency. After harvesting their produce, farmers sell it to TANFED or local cooperative societies. These organizations may then engage in value addition or processing to increase the product market value. Finally, the processed or raw agricultural commodities are distributed to consumers through various channels.

68. (C) P-II, Q-III, R-I, S-IV
National agricultural research institutes are strategically located across Tamil Nadu based on regional crop priorities. The Sugarcane Breeding Institute is in Coimbatore, and the National Research Centre for Banana is in Tiruchirappalli. The Central Institute of Brackishwater Aquaculture is headquartered in Chennai. Additionally, the Central Potato Research Station operates in Udhagamandalam to support the cultivation of temperate crops.

69. (A) It serves as the sole regulatory authority for the import of industrial chemical fertilizers into India.
The Tamil Nadu Agricultural University in Coimbatore is a premier institution dedicated to agricultural education, research, and extension. It is responsible for releasing new crop varieties and providing vital agro-advisory services to farmers across the state. However, the regulation of industrial chemical fertilizer imports is a function of the Central Government, not a state-level university.

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that provides year-round employment and income to many rural households, particularly in northwestern and western districts.

53. (A) Grapes - Cumbum Valley (Theni)
Certain regions in Tamil Nadu are ideally suited for specific fruit crops due to their unique microclimates. The Cumbum Valley in Theni district is the state premier region for grape cultivation, producing multiple harvests annually. In contrast, crops like apples are not suitable for the delta, and pineapples or litchi require specific humid or temperate conditions found in hilly areas.

54. (A) II, I, IV, III
The processing of turmeric involves several critical steps to ensure a high-quality final product. After harvesting the raw rhizomes from the field, they are boiled to remove the raw odor and set the color. The boiled rhizomes are then sun-dried until they become hard and brittle. Finally, the dried turmeric is polished to remove the outer skin and enhance appearance.

55. (B) Saffron
Tamil Nadu is a leader in commercial floriculture, with large-scale cultivation of flowers like Jasmine, Marigold, and Crossandra. These flowers are in high demand for local markets and export. However, saffron is not a commercial crop in the state, as it requires the specific temperate climate and soil conditions found only in high-altitude regions like the Kashmir valley.

56. (A) V only
Horticulture is a thriving sector in Tamil Nadu, with the Nilgiris and Kodaikanal being famous for temperate vegetables and fruits. The state is a national leader in loose flower production, and these crops often provide better financial returns than traditional field crops. The claim that the state discourages horticultural crops to prioritize only paddy is incorrect, as diversification is promoted.

57. (D) Integrated Farming System (IFS)
An Integrated Farming System involves the synergistic combination of various agricultural activities, such as crop cultivation, livestock rearing, poultry, and fisheries, on a single farm. This approach aims to maximize resource efficiency by using the waste from one component as an input for another. It enhances the total farm income, provides nutritional security, and ensures sustainable livelihoods for farmers.

58. (A) Tamil Nadu is completely devoid of any silk processing infrastructure.
Sericulture is well-established in Tamil Nadu, particularly in districts like Dharmapuri and Krishnagiri which serve as major hubs for mulberry cultivation. The state government provides various subsidies to support farmers in this sector. Kancheepuram remains a famous center for using raw silk in handloom weaving. It is incorrect to state that the state lacks silk processing infrastructure, as many units exist.

59. (B) Providing debt waiver and financial compensation for crop losses due to natural calamities.
The Tamil Nadu Farmers Relief Scheme is a welfare initiative designed to support the farming community during times of distress. Its primary focus is to provide financial compensation for crop losses caused by natural calamities like severe floods or droughts. Additionally, the scheme may involve debt relief measures to alleviate the financial burden on farmers, ensuring they can continue agricultural activities.

60. (B) Multi-day deep-sea trawlers
The mechanised fishing fleet in Tamil Nadu primarily consists of large, multi-day deep-sea trawlers that operate from major harbours like Chennai and Thoothukudi. These vessels are equipped with powerful engines and storage facilities to venture far into the ocean for several days. This is distinct from traditional craft like catamarans or coracles, which are used for near-shore or inland fishing.

61. (A) P-IV, Q-III, R-II, S-I
Tamil Nadu is home to several indigenous livestock breeds adapted to local environments. The Kangayam is a famous draught cattle of the western plains, while the Bargur breed is native to the Erode hills. The Toda buffalo is a unique breed found in the Nilgiris. Additionally, the Mecheri sheep is highly valued for its quality meat production, contributing to the rural economy.

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97. (B) Natural / Organic farming
The transition from chemical-intensive agriculture to methods using natural inputs like cow dung and urine formulations is known as organic or natural farming. In Tamil Nadu, these practices often utilize traditional preparations such as Jeevamrutham to restore soil health and biodiversity. This ecological approach aims to produce safe, chemical-free food while reducing the environmental footprint and dependency on synthetic fertilizers.

98. (D) Robust draught breed historically used for ploughing in western districts.
The Kangayam is a robust and iconic draught cattle breed native to the western districts of Tamil Nadu. Historically, it has been the mainstay of agricultural operations, particularly for ploughing and hauling heavy loads in the rugged terrain of the region. Unlike exotic dairy breeds, the Kangayam is valued more for its physical strength and endurance than for its milk yield.

99. (A) Financial compensation for farmers affected by floods or severe drought.
The Tamil Nadu Farmers Relief Scheme is designed to provide financial assistance to farmers who suffer crop losses due to natural calamities such as floods, cyclones, heavy rains, or severe drought. Its primary objective is to reduce the economic burden on affected farmers and help them recover from agricultural losses. The scheme supports livelihood security, encourages continued farming activities, and ensures that farmers receive timely relief during periods of agricultural distress and hardship.

100. (C) Mettur Dam Reservoir
While most famous harbours in Tamil Nadu are coastal, the Mettur Dam Reservoir is a prime example of a major inland fishing center. It supports a large population of freshwater fish and provides livelihoods for thousands of inland fishermen. In contrast, locations like Kasimedu, Tuticorin Port, and Muttom are coastal sites dedicated to marine fishing activities, reflecting the diverse fisheries sector.

101. (A) P-I, Q-II, R-III, S-IV
Tamil Nadu utilizes a variety of irrigation systems depending on water sources and geography. Large reservoirs like the Mettur Dam are the foundation for extensive canal irrigation networks. Shallow dug wells and deep borewells both tap into groundwater resources at different levels. Traditional tanks, or Eris, serve as essential systems for harvesting and storing surface runoff during the monsoon to sustain agriculture.

102. (D) Brackishwater aquaculture is prominently practiced in coastal districts like Nagapattinam and Tiruvallur.
Aquaculture is a thriving and regulated sector in Tamil Nadu, contributing significantly to both food security and export earnings. Brackishwater aquaculture, especially shrimp farming, is prominently practiced in coastal districts like Nagapattinam and Tiruvallur where saline water is accessible. The state also hosts specialized research institutions such as the Central Institute of Brackishwater Aquaculture, ensuring the industry benefits from science.

103. (A) Both A and R are true and R is the correct explanation of A.
The Tamil Nadu government actively promotes the installation of solar-powered pump sets for agriculture through significant subsidies. This initiative is designed to reduce the state overall expenditure on providing free agricultural electricity. Additionally, solar pumps provide farmers with a reliable and independent source of daytime power for irrigation, allowing them to water their fields without being affected by grid outages.

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104. (B) I and III only
Well irrigation, which includes both open wells and tube wells, is currently the predominant source of water for agriculture in Tamil Nadu. Tank irrigation remains vital in specific districts like Kancheepuram and Sivaganga. However, it is incorrect to state that canal irrigation accounts for a higher percentage of the net irrigated area than well irrigation, as groundwater extraction has expanded significantly.

105. (D) Kudimaramathu - Community participation in the maintenance and desilting of water bodies
Kudimaramathu is a traditional practice in Tamil Nadu involving community participation in the maintenance, desilting, and repair of local water bodies. This historical system ensures that irrigation tanks remain functional for the

70. (A) Both A and R are true and R is the correct explanation of A.
The fragmentation of landholdings into small and marginal farms remains a significant hurdle for agriculture in Tamil Nadu. When farm sizes are very small, it becomes economically difficult for individual farmers to afford or effectively utilize large-scale farm machinery like harvesters. This limitation often leads to higher production costs and lower efficiency compared to larger, consolidated agricultural operations.

71. (A) I, II and IV only
Agricultural marketing in Tamil Nadu is supported by several platforms. Uzhavar Sandhai allows farmers to bypass middlemen, while TANFED serves as the apex cooperative federation. The e-NAM platform integrates various markets for online trading. Regulated markets are designed to ensure fair prices for farmers and do not impose heavy, unregulated fees, as their primary goal is to protect producers.

72. (C) Physical area of land irrigated at least once during the agricultural year.
Net Irrigated Area refers to the actual physical extent of land that receives irrigation from any artificial source at least once during the agricultural year. Similar to the net sown area, this metric counts each piece of land only once, regardless of how many times it is watered or how many crops are grown on it within that year.

73. (D) Paramparagat Krishi Vikas Yojana (PKVY) - Promotion of chemical-free traditional farming
The Paramparagat Krishi Vikas Yojana is a key government initiative aimed at promoting chemical-free traditional farming and organic practices across the country. In Tamil Nadu, this scheme supports farmers in adopting ecological methods and achieving organic certification. Other terms like Kudimaramathu refer to water body maintenance, while e-NAM is a marketing platform, and PM Fasal Bima Yojana is insurance.

74. (A) I, II, III, IV
Marine fish production is highest in coastal districts with extensive fishing infrastructure and traditional fishing communities. Ramanathapuram and Nagapattinam are leading districts in terms of total catch. Chennai also contributes significantly as a major urban fishing hub. In contrast, Krishnagiri is an inland district with no coastline, resulting in zero marine fish production, although it may engage in aquaculture.

75. (B) Enhanced frost damage in the coastal delta zone
Climate change is expected to increase the frequency of droughts and lead to seawater intrusion into coastal agricultural lands in Tamil Nadu. It also forces shifts in traditional sowing periods due to erratic weather. However, enhanced frost damage in the coastal delta is not a likely impact, as the delta regions are tropical and do not experience frost, unlike hills.

76. (A) III and V only
Cropping patterns in Tamil Nadu are diverse and seasonal. Sornavari and Navarai are specific seasons with distinct sowing times. While paddy is a major crop, its cultivation varies across districts and seasons based on water availability. Furthermore, crop rotation is a common and widely encouraged practice in the state to maintain soil fertility. Therefore, claims of universal paddy cultivation are incorrect.

77. (A) Precision agriculture
Precision agriculture involves the use of modern technologies such as spatial data, soil sensors, and drones to optimize agricultural inputs and management. By precisely monitoring soil conditions and crop health, farmers in Tamil Nadu can apply water, fertilizers, and pesticides more efficiently. This high-tech approach helps in maximizing yields, reducing environmental impact, and improving the overall profitability of operations.

78. (C) Over 40% of the state's workforce still depends directly or indirectly on agriculture for their livelihood.
Agriculture continues to be a cornerstone of the socio-economic structure in Tamil Nadu, with over forty percent of the state total workforce still depending on it for their livelihood. This dependency includes both direct cultivation and various indirect roles in the agricultural supply chain. While urban sectors have grown, the primary sector remains essential for providing income and security.

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canals that distribute river water across the fertile plains. The consistent availability of water and the suitability of the soil enable farmers to engage in intensive paddy cultivation.

44. (A) I and III only
The Cauvery Delta Protected Agricultural Zone Act of twenty-twenty aims to ensure long-term food security by protecting fertile lands from industrial degradation. It specifically prohibits new hydrocarbon exploration and extraction projects within the designated delta districts. However, the Act does not cover the urban district of Chennai, focusing instead on the core agricultural regions that are vital for state production.

45. (A) Primary water source - Southwest monsoon only
Samba is the most important long-duration paddy season in Tamil Nadu, usually starting in August and lasting up to one hundred and fifty days. While it begins after the southwest monsoon, its success depends heavily on the subsequent northeast monsoon rains. The suggestion that it relies solely on the southwest monsoon is incorrect, as the latter primarily fills reservoirs.

46. (C) Fine-grained, tasty rice variety with relative resistance to common pests.
Kichili Samba is a popular traditional rice variety in Tamil Nadu, valued for its fine grain and excellent taste. It is often preferred for daily consumption and special meals. Beyond its culinary qualities, this variety possesses a degree of natural resistance to common pests and diseases, making it a sustainable choice for farmers interested in reducing their use of chemical pesticides.

47. (A) Tiruchirappalli - Theni - Kanyakumari
Banana cultivation is widespread in Tamil Nadu, with major production clusters located along a north-to-south gradient. Tiruchirappalli is a prominent northern hub in the delta region. Moving southwards, Theni district in the Cumbum valley is famous for its diverse banana varieties. Kanyakumari, at the southernmost tip of the state, also contributes significantly to the total banana output of the state.

48. (C) P-IV, Q-II, R-I, S-III
Different districts in Tamil Nadu have established themselves as leaders in specific crops. Tiruvannamalai is a major center for groundnut production. Krishnagiri is widely recognized as the mango capital of the state. Salem is the primary hub for tapioca cultivation and processing, while Perambalur has emerged as a significant area for cotton farming, supporting the textile industry raw material needs.

49. (B) Rainfed crop requiring very low rainfall that thrives in desert soils.
Coconut cultivation thrives in warm, humid tropical climates with well-drained soils, as seen in the Pollachi and Coimbatore regions. These areas are famous for high yields and related industries like coir. It is incorrect to describe coconut as a crop requiring very low rainfall or one that thrives in desert soils, as adequate moisture is essential for nut development.

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50. (B) Both A and R are true but R is not the correct explanation of A.
Groundnut is a principal oilseed crop in Tamil Nadu, widely grown in both rainfed and irrigated conditions. As a legume, it has the natural ability to fix atmospheric nitrogen through its root nodules, which significantly improves soil fertility. While this biological feature makes it excellent for crop rotation, its extensive cultivation is also driven by favorable soil types and market demand.

51. (A) I, II and IV only
Cotton is a vital cash crop for Tamil Nadu, primarily cultivated in the fertile black soils of the southern and western regions. It supports the state massive textile and handloom industries. While high-quality extra-long staple varieties are grown, the state does not produce enough cotton to meet the total demand of its many textile mills, necessitating imports from other states.

52. (C) The commercial rearing of silkworms for the production of raw silk.
Sericulture is the specialized agricultural activity involving the commercial rearing of silkworms to produce raw silk. This process includes the cultivation of mulberry trees, which provide the primary food source for the silkworms. In Tamil Nadu, sericulture is a significant allied activity

88. (C) P-III, Q-IV, R-II, S-I
Agriculture in Tamil Nadu is closely integrated with various industrial sectors. Sugarcane provides the raw material for numerous cooperative and private sugar mills. Tapioca is the primary input for the extensive sago and starch industries in the Salem region. Cotton is essential for the state vast textile and handloom sector, while coconut husks support the thriving coir industry, creating a robust economy.

89. (D) The net sown area constitutes over 80% of the total geographical area of the state.
Agricultural land use in Tamil Nadu is shaped by urbanization and climate factors. The area under non-agricultural uses is increasing, while fallow lands vary based on monsoon performance. Additionally, forest cover remains below the thirty-three percent national target. It is incorrect to claim that the net sown area constitutes over eighty percent of the state, as land is used elsewhere.

90. (A) Both A and R are true and R is the correct explanation of A.
The Nilgiris district is a major center for plantation crops such as tea and coffee. The region hilly terrain and cool, humid climate are ideally suited for these perennial crops but are generally unsuitable for the large-scale cultivation of wetland paddy. This geographical specialization allows the district to contribute significantly to the state plantation economy while focusing on crops that thrive.

91. (A) I, II and III only
Cotton cultivation is a major activity in the black soil regions of southern and western Tamil Nadu, supporting numerous handloom weaving clusters. Farmers in the state widely adopt Bt Cotton for its pest resistance. However, cotton is not a frost-tolerant crop and cannot be grown in the cold, high-altitude climate of Kodaikanal. It requires warm temperatures and specific soil conditions.

92. (B) A short-duration paddy crop traditionally sown between June and July.
In Tamil Nadu, Kuruvai is the traditional term for the short-duration paddy cropping season. This season typically begins with the sowing of seeds in June or July, coinciding with the release of water from the Mettur Dam. It is a vital agricultural period for the Cauvery delta, allowing farmers to complete a quick rice crop before the main Samba season begins.

93. (A) Thanjavur - Tapioca Starch
Geographical Indication tags in Tamil Nadu cover a wide range of unique agricultural products. Erode is correctly matched with its famous turmeric, while Madurai is synonymous with the fragrant Malligai flower. Kodaikanal is celebrated for its hill garlic. However, the large-scale industrial production of tapioca starch is primarily centered in Salem rather than Thanjavur, which is famous for its paddy.

94. (A) I, II, III
Traditional rice varieties in Tamil Nadu vary significantly in their grain morphology. Seeraga Samba is the smallest and finest variety, often compared to cumin seeds in appearance. Kichili Samba is a medium, fine-grained variety used for daily meals. In contrast, Mappillai Samba is a much thicker and bolder red rice variety. This sequence reflects the transition from aromatic fine grains to robust varieties.

95. (D) Presence of commission agents to facilitate sales.
The Uzhavar Sandhai system is designed to provide a direct link between farmers and consumers, featuring free weighing scales and daily price fixing based on wholesale rates. One of its most important characteristics is the strict prohibition of commission agents or middlemen. This ensures that farmers retain the full profit from their sales and consumers are not overcharged by fees.

96. (B) II only
Fisheries are a major sector in Tamil Nadu, supported by a long coastline and key hubs like Rameswaram and Nagapattinam. A seasonal fishing ban is implemented annually to allow fish stocks to breed. Pearl fisheries also have a long historical presence in the Gulf of Mannar. It is incorrect to state that inland fisheries are banned; they are actually a promoted and significant source.

79. (D) Red rice variety with short duration and resistance to drought.
Kullakar is a traditional red rice variety of Tamil Nadu that is highly valued for its resilience. It is characterized by its short growing duration and remarkable resistance to drought conditions, making it suitable for varying weather patterns. Unlike modern highly polished white rice, Kullakar retains its bran layer, providing higher nutritional value and traditional medicinal benefits to consumers.

80. (C) High Rainfall Zone - Kanyakumari
Tamil Nadu is categorized into several agro-climatic zones based on regional environmental factors. Kanyakumari district is correctly identified as part of the High Rainfall Zone due to its exposure to both the southwest and northeast monsoons. Other zones include the Delta Zone for Thanjavur and the Hilly Zone for the Nilgiris, each supporting specific crops best suited to local.

81. (B) P-I, Q-II, R-III, S-IV
Geographical Indication tags highlight the unique agricultural products of various districts in Tamil Nadu. The Virupakshi and Sirumalai hill bananas are both prized products of the Dindigul region. Kovilpatti in Thoothukudi is famous for its kadalai mittai, a traditional groundnut chikki. Additionally, the Ramanathapuram Mundu Chilli is celebrated for its distinctive round shape and pungency, reflecting local geography.

82. (D) High-yielding varieties like ADT (Aduthurai) and CO (Coimbatore) series dominate the state's commercial paddy area.
While traditional rice varieties are gaining interest, the commercial paddy landscape in Tamil Nadu is currently dominated by high-yielding varieties. Series such as ADT from Aduthurai and CO from Coimbatore are widely cultivated due to their superior productivity and shorter durations. These modern varieties have been instrumental in making the state a top rice producer in India, ensuring food supply.

83. (A) Both A and R are true and R is the correct explanation of A.
The cultivation of millets is being actively promoted in the rainfed areas of Tamil Nadu to address climate and nutritional challenges. Millets are naturally resilient to drought and require significantly less water than paddy or sugarcane, making them ideal for arid regions. Furthermore, they provide high nutritional security as they are rich in minerals and fiber, offering a sustainable.

84. (A) I and III only
The Cauvery Delta region spans across key agricultural districts including Thanjavur, Tiruvarur, and Nagapattinam. It is a vital farming hub that is now legally protected against non-agricultural industrial exploitation, such as coal bed methane and hydrocarbon extraction. While it benefits from the southwest monsoon, the region also relies heavily on the northeast monsoon rains and river water.

85. (A) Karuppu Kavuni - Historically known as forbidden rice, rich in anthocyanins
Karuppu Kavuni is a prestigious traditional black rice variety of Tamil Nadu, historically known as forbidden rice because it was once reserved for royalty. It is highly valued today for being exceptionally rich in anthocyanins and other antioxidants. Other varieties like Kichili Samba and Mappillai Samba also hold significant cultural value and health benefits, reflecting the rich biodiversity.

86. (D) Paddy is the principal crop, followed by millets, pulses, and oilseeds.
The cropping pattern in Tamil Nadu is characterized by the dominance of paddy as the principal food crop. This is followed by a diverse range of millets, pulses, and oilseeds grown across different agro-climatic zones. Food crops generally occupy a larger cultivated area than non-food crops. This pattern ensures both local food security and the production of raw materials.

87. (A) Nagapattinam - Tiruchirappalli - Karur - Coimbatore
Moving from the coastal delta inwards to the western agro-climatic zone reveals a transition in geography and agriculture. Nagapattinam is located on the eastern coast in the heart of the delta. Following the course of the Cauvery river inland, one passes through Tiruchirappalli and Karur. The journey concludes in the western upland district of Coimbatore, known for soil.

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collective benefit of the village. Other terms like Grand Anicut refer to an ancient Chola dam, while system tanks are connected to rivers, highlighting the state sophisticated history.

106. (A) The Bhavanisagar Dam is an earthen dam located in the Erode district.
The Bhavanisagar Dam is a notable earthen dam located in the Erode district, serving as a major irrigation source for the region. While the Mettur Dam is built across the Cauvery and the Vaigai Dam on the Vaigai river, the state has a well-developed canal network despite its rocky terrain. These projects are essential for regulating water flow and supporting agriculture.

107. (A) I, II, III
The development of agricultural infrastructure in Tamil Nadu spans centuries. The construction of the Grand Anicut, or Kallanai, was completed in the ancient Chola period. Much later, the Mettur Dam was commissioned in the nineteen-thirties during the British era to regulate the Cauvery waters. Finally, the Tamil Nadu Agricultural University was formally established in nineteen-seventy-one, marking a milestone in education.

108. (B) P-I, Q-II, R-III, S-IV
Each ICAR research institute in Tamil Nadu has a specific mandate to improve agricultural productivity. The CPCRI regional station focuses on plantation crops like coconut. The Sugarcane Breeding Institute is dedicated to developing high-yielding sugarcane varieties. The National Research Centre for Banana works on post-harvest technology and production, while the Central Institute of Brackishwater Aquaculture focuses on sustainable aquaculture practices.

109. (A) The state relies entirely on foreign research institutions for developing pest-resistant cotton.
Agricultural research in Tamil Nadu is highly localized and robust, with TNAU and the Sugarcane Breeding Institute leading the way in developing varieties suited for the state climate. Krishi Vigyan Kendras are instrumental in bringing these lab innovations to the field. It is incorrect to claim that the state relies entirely on foreign institutions for cotton research, as domestic institutes actively work.

110. (A) Both A and R are true and R is the correct explanation of A.
The Tamil Nadu government utilizes Direct Benefit Transfer to provide crop loss compensation to farmers. By sending financial relief directly to their bank accounts, the system effectively eliminates the influence of middlemen and ensures that the full amount reaches the intended beneficiaries. This transparent process guarantees timely assistance to affected farmers, helping them recover from agricultural losses with minimal administrative delays.

111. (A) I, II and IV only
Uzhavar Sandhai is a successful initiative that enables farmers to achieve better profit margins by selling directly to consumers. It benefits the public by providing fresh vegetables at lower prices than traditional retail outlets. Often, subsidized transport is provided to help farmers bring their produce to these markets. The claim that it prohibits all produce except packaged foods is incorrect, as it sells fresh.

112. (C) TANFED
TANFED, the Tamil Nadu Co-operative Marketing Federation, is the apex body responsible for the cooperative marketing of agricultural produce in the state. Its key functions include the procurement and distribution of essential inputs like fertilizers and seeds to farmers through its network. By facilitating both the supply of inputs and the marketing of outputs, it plays a vital role in supporting rural communities.

113. (B) Nammazhwar - A renowned agricultural scientist who exclusively promoted genetically modified crops
Organic farming in Tamil Nadu is supported by traditional practices such as the use of Panchagavya and Jeevamrutham, and the production of Vermicompost. G. Nammazhwar was a legendary figure who dedicated his life to promoting ecological and organic farming while actively campaigning against genetically modified crops and chemical fertilizers. Therefore, describing him as a promoter of genetically modified crops is fundamentally incorrect.

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services in remote villages.
(D) It raises agricultural income by improving market access and lowering transit losses.
(E) Answer not known

21. In which year was the first passenger railway line in India opened between Mumbai (Bori Bunder) and Thane?
(A) 1848
(B) 1853
(C) 1857
(D) 1861
(E) Answer not known

22. Consider the following statements regarding the economic significance of Indian Railways:
I. It is the principal mode of transportation for bulk freight like coal and iron ore.
II. It employs fewer people compared to the domestic aviation sector.
III. It facilitates national integration by offering long-distance travel at affordable rates.
Which of the above statements is/are correct?
(A) I and III
(B) I and II
(C) II and III
(D) I only
(E) Answer not known

23. What is the total number of railway zones currently operational in Indian Railways (including the Metro Railway, Kolkata)?
(A) 16
(B) 17
(C) 18
(D) 19
(E) Answer not known

24. Match the Railway Zones (List I) with their Headquarters (List II):
List I: (Railway Zones)
P. Central Railway
Q. Southern Railway
R. Eastern Railway
S. Western Railway
List II: (Headquarters)
I. Chennai
II. Mumbai CSMT
III. Mumbai Churchgate
IV. Kolkata
(A) P-II, Q-I, R-IV, S-III
(B) P-III, Q-I, R-IV, S-II
(C) P-II, Q-IV, R-I, S-III
(D) P-I, Q-II, R-III, S-IV
(E) Answer not known

25. The following question consists of two statements — one labelled as Assertion (A) and the other as Reason (R). Examine these two statements carefully and select the correct answer using the codes given below.
Assertion (A): Project Unigauge was initiated by Indian Railways to convert all meter and narrow gauge lines to broad gauge.
Reason (R): Standardizing gauges eliminates the need for transshipment, thereby reducing travel time and operational costs.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

26. Consider the following rail systems in India:
I. Metro Rail
II. Vande Bharat Express
III. High-Speed Rail (Bullet Train project launch)
Which of the following represents the correct chronological order of their introduction/ launch in India?
(A) I, II, III
(B) II, I, III
(C) III, I, II
(D) I, III, II
(E) Answer not known

27. Which of the following statements is correct regarding the Vande Bharat trains?
(A) They are imported entirely from Japan under a specific technology transfer agreement.
(B) They are exclusively designed for freight transport across the Eastern Freight Corridor.
(C) They operate strictly on narrow-gauge heritage routes in the Himalayan region.
(D) They are indigenous, self-propelled, semi-high-speed train sets without a locomotive.
(E) Answer not known

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123. (A) Both A and R are true and R is the correct explanation of A.
There is a noticeable revival in the cultivation of traditional rice varieties across Tamil Nadu. This trend is driven by growing consumer awareness regarding the significant health benefits and nutritional value of these indigenous grains. As more people seek out foods with lower glycemic indices and higher mineral content, the market demand for varieties like Mappillai Samba and Karuppu Kavuni rises.

124. (A) I and II only
Traditional rice varieties like Mappillai Samba are known for their health benefits, including a low glycemic index. Kichili Samba is preferred for its fine grain and pleasant taste. One of the primary advantages of these indigenous varieties is their natural resistance to local pests and diseases. This resilience means they require much less chemical pesticide application compared to modern hybrids.

125. (A) Theni - Known for large-scale cultivation and diverse varieties like G-9 and Nendran
Theni district is a major hub for banana cultivation in Tamil Nadu, particularly in the fertile Cumbum valley. It is known for producing a wide range of commercial varieties, including G-9 and Nendran, which are exported both within and outside the state. Unlike urban or arid regions, the soil and water conditions in Theni are perfectly suited for intensive and diverse production.

126. (C) The state has one of the highest productivity rates (yield per hectare) of sugarcane in India.
Tamil Nadu is recognized for having one of the highest sugarcane productivity rates in India, often exceeding the national average in terms of yield per hectare. Although it is a long-duration crop requiring nearly a year to mature, the state climate and efficient irrigation practices contribute to this success. The sector is supported by many cooperative mills that ensure fair treatment for farmers.

127. (A) I, II, III
Groundnut is a major oilseed crop that thrives in the well-drained soils of northern Tamil Nadu. Tiruvannamalai and Vellore are the leading producers, consistently contributing large areas to groundnut cultivation. These districts have the necessary environmental conditions and market infrastructure to support this crop. In contrast, Chennai is a completely urbanized area with no significant agricultural land for groundnut production.

128. (C) P-III, Q-IV, R-I, S-II
Tamil Nadu horticultural map is defined by several specialized production centers. Salem is the primary district for tapioca cultivation and its industrial processing. Krishnagiri leads the state in mango production, while Erode is world-famous for its high-quality turmeric. Madurai remains the undisputed leader in the production of Jasmine flowers, locally known as Malligai, celebrated for thick petals and strong fragrance.

129. (B) Millets require double the amount of water compared to wetland paddy.
Millets are drought-resilient crops that are primarily grown under rainfed conditions in Tamil Nadu. The state has launched specific missions to increase the area under these nutri-cereals, with districts like Dharmapuri and Krishnagiri being major producers of Ragi. It is incorrect to claim that millets require more water than paddy; in fact, they produce nutritious grain with very little.

130. (A) Both A and R are true and R is the correct explanation of A.
Sericulture provides a regular and relatively high income for farmers in districts like Dharmapuri and Krishnagiri. This is because mulberry, the primary food source for silkworms, is a hardy plant that can be harvested multiple times throughout the year. These frequent harvests allow farmers to conduct several silkworm rearing cycles annually, ensuring a continuous flow of income and sustainability.

131. (A) I, II and III only
The marine fisheries sector in Tamil Nadu is well-supported by infrastructure in Chennai and Thoothukudi. The government promotes deep-sea fishing to improve livelihoods and reduce pressure on near-shore waters. Additionally, ecologically sensitive areas like the Gulf of Mannar are subject to regulated fishing. However, marine fish production is highly dependent on

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(C) P-I, Q-III, R-IV, S-II
(D) P-IV, Q-I, R-III, S-II
(E) Answer not known

35. Consider the following railway gauge types:
I. Metre Gauge
II. Narrow Gauge
III. Broad Gauge
IV. Standard Gauge
Which of the following represents the correct sequence of these gauge types in ascending order of their track width?
(A) II, I, IV, III
(B) I, II, III, IV
(C) II, IV, I, III
(D) IV, I, II, III
(E) Answer not known

36. Which of the following is not a recognized zone of the Indian Railways?
(A) South Coast Railway
(B) East Central Railway
(C) North Western Railway
(D) Central Equatorial Railway
(E) Answer not known

37. What is the key advantage of completing 100% electrification of the broad-gauge network in Indian Railways?
(A) It reduces dependence on imported fossil fuels and lowers operational costs.
(B) It eliminates the need for complex digital signaling systems across the route.
(C) It allows trains to operate without human locopilots through automated control.
(D) It permits freight trains to share tracks with urban metro rail networks safely.
(E) Answer not known

38. The following question consists of two statements — one labelled as Assertion (A) and the other as Reason (R). Examine these two statements carefully and select the correct answer using the codes given below.
Assertion (A): The establishment of Dedicated Freight Corridors (DFCs) is crucial for improving the modal share of railways in freight transport.
Reason (R): DFCs guarantee faster transit times for goods by separating freight traffic from passenger traffic.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

39. Which pair accurately identifies a railway division and its associated state?
(A) Hubballi Division - Karnataka
(B) Chennai Division - Kerala
(C) Danapur Division - Rajasthan
(D) Waltair Division - Gujarat
(E) Answer not known

40. From the rapid expansion of Metro rail in tier-1 and tier-2 Indian cities, what inference can be accurately drawn regarding urban planning?
(A) Urban planning is prioritizing decentralized rural settlements over city development.
(B) Metro expansion proves that surface bus transport is obsolete and will be discontinued.
(C) Urban areas are primarily focusing on inland waterways for regular commuter mobility.
(D) Planning focuses on high-capacity, sustainable mass transit systems over private vehicles.
(E) Answer not known

41. Which entity is primarily responsible for the regulation of civil aviation in India, including safety issues and licensing?
(A) Airport Authority of India (AAI)
(B) Bureau of Civil Aviation Security (BCAS)
(C) Directorate General of Civil Aviation (DGCA)
(D) Indian Air Force (IAF)
(E) Answer not known

42. Consider the following statements regarding the UDAN (Ude Desh ka Aam Nagrik) scheme:
I. It aims to stimulate regional air connectivity and make air travel affordable to the masses.
II. Fares for a certain percentage of seats are capped and subsidized by the government.
III. It strictly focuses on establishing new international airports.
Which of the above statements is/are correct?
(A) I and II

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CHAPTER 08
Transport and Communication

1. Which of the following best defines the role of transport in economic development?
(A) It serves as the primary sector of the regional economy by generating essential raw materials.
(B) It solely contributes to the urbanisation process by displacing various rural populations.
(C) It replaces communication systems by providing a direct physical exchange of information.
(D) It connects production and consumption centers by moving goods and people.
(E) Answer not known

2. Consider the following statements regarding road transport in India:
I. It provides door-to-door service and acts as a feeder to other modes of transport.
II. It requires higher capital investment for construction compared to railways.
III. It is highly suitable for short and medium distances.
Which of the above statements is/are correct?
(A) I and III
(B) II and III
(C) I and II
(D) II only
(E) Answer not known

3. What is the approximate total length of the road network in India as per recent classifications?
(A) Around 33 lakh kilometres
(B) Around 43 lakh kilometres
(C) Around 63 lakh kilometres
(D) Around 83 lakh kilometres
(E) Answer not known

4. Match the National Highway numbering system (List I) with their orientation (List II):
List I: (National Highway numbering system)
P. Even-numbered highways
Q. Odd-numbered highways
R. Three-digit numbered highways (e.g., 144)
S. Suffix 'A', 'B', 'C' (e.g., 44A)
List II: (Orientation)
I. Branches or extensions of secondary routes
II. North-South orientation
III. Secondary routes or branches of main highway
IV. East-West orientation
(A) P-II, Q-IV, R-III, S-I
(B) P-IV, Q-II, R-III, S-I
(C) P-II, Q-IV, R-I, S-III
(D) P-IV, Q-II, R-I, S-III
(E) Answer not known

5. The following question consists of two statements — one labelled as Assertion (A) and the other as Reason (R). Examine these two statements carefully and select the correct answer using the codes given below.
Assertion (A): The Golden Quadrilateral project significantly reduced the travel time and cost between the major metropolitan cities of India.
Reason (R): The project connects Delhi, Mumbai, Chennai, and Kolkata with a high-speed railway network.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

6. Which of the following is the correct sequence of states in descending order of their National Highway network length?
(A) Maharashtra, Uttar Pradesh, Rajasthan, Madhya Pradesh
(B) Uttar Pradesh, Maharashtra, Madhya Pradesh, Rajasthan
(C) Rajasthan, Maharashtra, Uttar Pradesh, Madhya Pradesh

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seasonal monsoons and ocean currents, which influence fish breeding.

132. (C) Aquaculture
Aquaculture is the formal term for the controlled breeding, rearing, and harvesting of aquatic organisms such as fish, shrimp, and mollusks in specialized environments. This includes the use of ponds, tanks, and other enclosures to manage the growth and health of the species. In Tamil Nadu, aquaculture plays a vital role in increasing fish production and providing protein.

133. (A) Aseel - A high-yielding commercial dairy cow
Tamil Nadu is home to diverse livestock and poultry breeds. The Kangayam is a famous draught cattle breed, the Mecheri is a sheep breed prized for meat, and the Toda buffalo is native to the Nilgiris. However, the Aseel is not a high-yielding dairy cow; it is a famous indigenous breed of poultry known for its hardiness and quality meat.

134. (A) I, II, III
The landscape of irrigation in Tamil Nadu has changed significantly over time. Wells and tube wells now constitute the largest share of the net irrigated area, accounting for the majority of water supply for farming. Canals, primarily fed by major river reservoirs, are the second most important source. Traditional tanks now contribute the smallest percentage compared to groundwater and canals.

135. (B) Basin flooding
Micro-irrigation systems are central to the Tamil Nadu Precision Farming Project and include methods like surface and sub-surface drip irrigation, as well as micro-sprinklers. These technologies are designed to deliver water directly to plants efficiently. In contrast, basin flooding is a traditional irrigation method that involves saturating the entire soil surface, which leads to significant water wastage through evaporation.

136. (A) III only
Agricultural marketing in Tamil Nadu is governed by boards that regulate trading and procurement. Minimum Support Price operations and the e-NAM platform are active in the state to support farmers. Additionally, cold storage facilities are being expanded to help reduce post-harvest losses. The claim that the Uzhavar Sandhai scheme has been entirely abolished since twenty-fifteen is incorrect, as they thrive.

137. (D) Cooperative farming / Farmer Producer Organisations (FPOs)
Farmer Producer Organisations represent a collective economic concept where small and marginal farmers voluntarily consolidate their operations. By working together, they can achieve economies of scale in purchasing inputs and better bargaining power when selling their produce in the market. This cooperative approach helps farmers in Tamil Nadu overcome the challenges of land fragmentation and improves their total income.

138. (A) Apple
The delta agro-climatic zone of Tamil Nadu is characterized by its fertile alluvial soil and ample water supply, making it ideal for wetland paddy and pulses like black gram and green gram. However, apples are not suitable for this region, as they require the cool, temperate climate and specific chilling hours found only in high-altitude hilly areas like the Nilgiris.

139. (B) Nodal agency for the procurement of paddy at the Minimum Support Price.
The Tamil Nadu Civil Supplies Corporation plays a critical role in the state agricultural economy as the nodal agency for paddy procurement. It operates numerous direct procurement centers where farmers can sell their harvest at the government-mandated Minimum Support Price. This system ensures that farmers receive a fair price for their produce, protecting them from market fluctuations and securing stock.

140. (B) Floriculture
Floriculture is the branch of agriculture that focuses on the cultivation of flowering and ornamental plants for commercial purposes. Tamil Nadu is a national leader in this sector, particularly in the production of loose flowers like Jasmine, Rose, and Marigold. These crops are highly valued for their use in festivals and ceremonies, contributing significantly to the state horticultural wealth.

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(E) Answer not known

14. Match the Golden Quadrilateral segments (List I) with their approximate length contribution (List II):
List I: (Golden Quadrilateral segments)
P. Delhi - Mumbai
Q. Mumbai - Chennai
R. Chennai - Kolkata
S. Kolkata - Delhi
List II: (Approximate length contribution)
I. 1,684 km
II. 1,453 km
III. 1,419 km
IV. 1,290 km
(A) P-III, Q-IV, R-I, S-II
(B) P-II, Q-IV, R-I, S-III
(C) P-III, Q-I, R-IV, S-II
(D) P-I, Q-IV, R-III, S-II
(E) Answer not known

15. Consider the following road categories:
I. National Highways
II. Rural Roads (including PMGSY)
III. State Highways
IV. District Roads
Which of the following represents the correct sequence of these categories in descending order of their total share in the Indian road network length?
(A) I, III, IV, II
(B) II, IV, III, I
(C) II, I, IV, III
(D) IV, II, III, I
(E) Answer not known

16. Which of the following is not a standard measure implemented to address road transport challenges in India?
(A) Implementation of FASTag for electronic toll collection
(B) Enforcement of the Motor Vehicles (Amendment) Act to penalise traffic violations
(C) Complete ban on the production of internal combustion engine vehicles by 2025
(D) Development of multi-modal logistics parks to reduce highway congestion
(E) Answer not known

17. What is the primary advantage of road transport over railway transport?
(A) It has a higher carrying capacity for bulk goods like coal.
(B) It is environmentally cleaner than electrified rail transport.
(C) It is more cost-effective for long-distance heavy freight movement.
(D) It offers flexible, point-to-point and door-to-door delivery services.
(E) Answer not known

18. The following question consists of two statements — one labelled as Assertion (A) and the other as Reason (R). Examine these two statements carefully and select the correct answer using the codes given below.
Assertion (A): The maintenance of district and rural roads in India is often inadequate compared to National Highways.
Reason (R): Local bodies and State governments frequently face financial deficits and lack sufficient technical expertise.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

19. Which of the following pairs concerning major Indian highway projects is correctly matched?
(A) Bharatmala - Focused on dedicated railway freight routes
(B) Golden Quadrilateral - Connects Delhi, Mumbai, Chennai, Kolkata
(C) Setu Bharatam - Building massive seaports across coastal lines
(D) North-South Corridor - Connects Porbandar to Silchar
(E) Answer not known

20. Based on the expansion of road networks through schemes like PMGSY, what can be inferred about its socio-economic impact?
(A) It leads to the isolation of rural markets by limiting external trade.
(B) It accelerates the shift of agricultural workforce to urban IT sectors.
(C) It restricts the availability of public health

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(D) Maharashtra, Rajasthan, Uttar Pradesh, Madhya Pradesh
(E) Answer not known

7. Which of the following statements is correct regarding the North-South and East-West corridors?
(A) The North-South corridor connects Srinagar in Jammu & Kashmir to Kanyakumari in Tamil Nadu.
(B) The East-West corridor connects Silchar in Assam to Surat in Gujarat.
(C) Both corridors are entirely maintained by the respective State Governments through local highway departments.
(D) The corridors do not intersect at any specific geographic point within the territorial boundaries of the country.
(E) Answer not known

8. Which of the following pairs is correctly matched regarding road classification and maintenance responsibility?
(A) National Highways - State Public Works Department
(B) State Highways - National Highways Authority of India
(C) Border Roads - Local Municipal Corporations
(D) District Roads - Zila Parishad
(E) Answer not known

9. Consider the following statements regarding the Bharatmala Pariyojana:
I. It is an umbrella program for the highways sector.
II. It aims to optimize the efficiency of freight and passenger movement across the country.
III. It focuses exclusively on the construction of rural roads.
IV. Phase 1 targets the development of economic corridors and coastal roads.
Which of the above statements are correct?
(A) I, II and IV
(B) I, III and IV
(C) II and III
(D) I and IV
(E) Answer not known

10. Which of the following statements about the Pradhan Mantri Gram Sadak Yojana (PMGSY) is incorrect?
(A) It was launched to provide all-weather road connectivity to unconnected habitations.
(B) It is a centrally sponsored scheme implemented by the Ministry of Rural Development.
(C) It solely focuses on connecting major urban centers to national highways.
(D) Its success has significantly improved rural market access and education.
(E) Answer not known

11. Which mechanism is often used to attract private investment for road construction where user toll revenue may not initially cover the capital costs?
(A) Direct Cash Benefit Transfer
(B) Universal Basic Income
(C) Statutory Liquidity Ratio
(D) Viability Gap Funding
(E) Answer not known

12. Consider the following challenges in India's road transport sector:
I. Inadequate road maintenance leading to potholes.
II. High rate of road accidents and fatalities.
III. Severe traffic congestion in metropolitan areas.
IV. Over-reliance on waterways reducing road toll collections.
V. Funding constraints for continuous highway expansion.
Which of the above are considered valid challenges?
(A) I, II, III and V
(B) I, II, IV and V
(C) I, II and III
(D) II, IV and V
(E) Answer not known

13. How are Indian roads classified based on the Nagpur Plan of 1943?
(A) Urban, Semi-urban, Rural, and Forest roads
(B) National Highways, State Highways, District Roads, and Village Roads
(C) Expressways, Super Highways, Standard Highways, and Feeder Roads
(D) International Highways, National Highways, Zonal Roads, and Block Roads

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28. Which of the following pairs regarding railway projects is incorrectly matched?
(A) Kavach System - Biometric attendance system for railway staff
(B) Eastern Dedicated Freight Corridor - Ludhiana to Dankuni
(C) Western Dedicated Freight Corridor - Dadri to JNPT
(D) Mumbai-Ahmedabad Corridor - High-Speed Rail (Bullet Train)
(E) Answer not known

29. Consider the following statements about the Kavach system:
I. It is an indigenous Automatic Train Protection (ATP) system.
II. It applies brakes automatically if the pilot fails to do so in order to prevent collisions.
III. It facilitates continuous updates of movement authority using radio communication.
IV. It was primarily developed to monitor air-conditioning efficiency in railway coaches.
Which of the above statements are correct?
(A) I, II and III
(B) II, III and IV
(C) I and II
(D) I and IV
(E) Answer not known

30. Which of the following statements about the Dedicated Freight Corridors (DFC) in India is incorrect?
(A) They are designed to decongest existing passenger rail networks.
(B) They are being constructed exclusively as narrow-gauge networks to save land acquisition costs.
(C) They aim to increase the average speed of freight trains.
(D) The project heavily utilizes electric traction to minimize carbon emissions.
(E) Answer not known

31. What is the fundamental mechanism underlying the Mumbai-Ahmedabad high-speed rail corridor?
(A) It uses the Japanese Shinkansen technology on standard gauge tracks.
(B) It utilizes Maglev technology for frictionless movement.
(C) It relies on traditional diesel locomotives upgraded for higher speeds.
(D) It employs hyperloop vacuum tube technology.
(E) Answer not known

32. Consider the following statements regarding the significance of urban Metro rail systems in India:
I. Significant reduction in urban traffic congestion.
II. Lower per capita carbon footprint compared to private vehicles.
III. Complete elimination of all surface road transport systems.
IV. Provision of safe and reliable urban mobility.
V. Enhancement of real estate values along the metro corridors.
Which of the above are correct benefits?
(A) I, II, IV and V
(B) I, II, III and IV
(C) I, II and IV
(D) II, IV and V
(E) Answer not known

33. In the context of Indian Railways, how is 'Broad Gauge' defined?
(A) The distance between the inner sides of two tracks is 1.676 metres.
(B) The distance between the inner sides of two tracks is 1.000 metre.
(C) The distance between the inner sides of two tracks is 0.762 metres.
(D) The distance between the inner sides of two tracks is 1.435 metres.
(E) Answer not known

34. Match the Railway Gauge Types (List I) with their respective track width (List II):
List I: (Railway Gauge Types)
P. Broad Gauge
Q. Metre Gauge
R. Narrow Gauge (Standard)
S. Standard Gauge (Metro Rail)
List II: (Track width)
I. 1.000 m
II. 1.435 m
III. 1.676 m
IV. 0.762 m
(A) P-III, Q-I, R-IV, S-II
(B) P-III, Q-I, R-II, S-IV

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114. (A) I, II, III
Inland fish production depends on the presence of large water bodies such as tanks, reservoirs, and perennial canals. Districts like Kancheepuram and Vellore, which have numerous large irrigation tanks and river systems, are major contributors to total inland production. In contrast, Chennai is a highly urbanized district with very limited inland water area, resulting in the lowest contribution to the total catch.

115. (A) Complete banning of high-yielding vegetable seeds
The Tamil Nadu Precision Farming Project focuses on increasing productivity through the use of drip irrigation, fertigation, and the organization of farmers into clusters. It aims to modernize agriculture by using high-quality inputs and better management practices. The project does not involve banning high-yielding vegetable seeds; instead, it encourages their use under precise growing conditions to maximize the returns for small farmers.

116. (A) IV only
Climate change presents a serious threat to agriculture in Tamil Nadu, manifesting as rising temperatures, more intense cyclonic storms, and unpredictable monsoon patterns. These factors generally lead to decreased yields and increased vulnerability for farmers, especially in coastal regions prone to seawater inundation. It is factually incorrect to suggest that climate change uniformly increases crop yields across the state, as impacts are negative.

117. (A) Salinity intrusion
Salinity intrusion occurs when seawater penetrates into coastal agricultural lands, often due to rising sea levels or the over-extraction of groundwater. This geographical phenomenon increases the salt content of the soil, making it toxic for most traditional crops like paddy. This degradation of soil fertility and the subsequent decline in crop yields are significant challenges for farmers in the Cauvery delta.

118. (D) Agriculture guarantees the highest per capita income among all primary, secondary, and tertiary sectors in the state.
The agricultural workforce in Tamil Nadu is experiencing a significant shift, with a high participation of women and a shortage of labour during peak seasons. Many rural youth are also moving toward the manufacturing and service sectors. However, it is incorrect to claim that agriculture provides the highest per capita income among all sectors; it remains a sector with generally lower income.

119. (B) It fixed a ceiling on the extent of agricultural land a family can hold to promote equitable distribution.
The Tamil Nadu Land Reforms (Fixation of Ceiling on Land) Act was implemented to promote social justice and equitable land distribution. It fixed a specific legal limit on the amount of agricultural land a single family could hold. Excess lands were acquired by the state and redistributed to landless labourers. This legislation was a key step in reducing the concentration of land ownership.

120. (C) Tea
Plantation crops like tea are extensively grown in the High Altitude Zones of Tamil Nadu, such as the Nilgiris and parts of the Anamalai hills. These regions offer the specific cool temperatures and high rainfall required for tea bushes to flourish. While paddy and groundnut are common in the plains and cotton in the black soil tracts, tea remains the dominant plantation crop.

121. (D) P-I, Q-II, R-III, S-IV
The agricultural calendar of Tamil Nadu is defined by specific sowing and harvesting cycles. Kuruvai, sown in summer, is harvested during September or October. Samba, the main long-duration crop, is typically harvested in January or February. Navarai follows a winter cycle with harvesting in April or May, while Pishanam, common in the southern districts, is harvested during February or March.

122. (A) Tamil Nadu ranks consistently among the top five rice-producing states in India.
Tamil Nadu is a major player in India agricultural sector, consistently ranking among the top five rice-producing states. The state achieves high productivity through intensive cultivation practices and the widespread use of high-yielding varieties. While it grows various types of rice across multiple seasons, its large-scale contribution to the national food basket is a testament to its successful irrigation systems.

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(B) I and III
(C) II and III
(D) I only
(E) Answer not known

43. Which of the following is the regulatory body tasked with creating, upgrading, maintaining, and managing civil aviation infrastructure in India?
(A) Airports Authority of India (AAI)
(B) Airports Economic Regulatory Authority (AERA)
(C) Directorate General of Civil Aviation (DGCA)
(D) National Aviation Company of India Limited (NACIL)
(E) Answer not known

44. Match the Major International Airports (List I) with their respective locations (List II):
List I: (Major International Airports)
P. Indira Gandhi International Airport
Q. Chhatrapati Shivaji Maharaj International Airport
R. Netaji Subhas Kolkata International Airport
S. Kempegowda International Airport
List II: (Locations)
I. Mumbai
II. Kolkata
III. Bengaluru
IV. Delhi
(A) P-IV, Q-I, R-II, S-III
(B) P-I, Q-IV, R-III, S-II
(C) P-IV, Q-II, R-I, S-III
(D) P-III, Q-I, R-IV, S-II
(E) Answer not known

45. The following question consists of two statements — one labelled as Assertion (A) and the other as Reason (R). Examine these two statements carefully and select the correct answer using the codes given below.
Assertion (A): The Viability Gap Funding (VGF) is essential for the success of the UDAN scheme.
Reason (R): Airlines are reluctant to operate on untested regional routes unless they are compensated for potential operational losses.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

46. Consider the following major Indian cities:
I. Delhi
II. Mumbai
III. Bengaluru
IV. Chennai
Which of the following represents the correct sequence of these cities in decreasing order of their airport passenger traffic?
(A) I, II, III, IV
(B) II, I, IV, III
(C) III, I, II, IV
(D) I, IV, II, III
(E) Answer not known

47. Which of the following statements correctly highlights the significance of air cargo and logistics?
(A) It is indispensable for the rapid export of high-value and perishable goods.
(B) It is the most economical mode for transporting bulk ores over short distances.
(C) It constitutes the largest share of domestic freight movement by volume in India.
(D) It requires minimal infrastructural support compared to road transport.
(E) Answer not known

48. Which of the following pairs of National Waterways (NW) and their associated river systems is correctly matched?
(A) NW-2 - Godavari and Krishna Rivers
(B) NW-3 - West Coast Canal
(C) NW-1 - Ganga-Bhagirathi-Hooghly River System
(D) NW-4 - West Coast Canal
(E) Answer not known

49. Consider the following statements regarding the Sagarmala project:
I. It focuses on port modernization and new port development.
II. It aims to promote port-led industrialization.
III. It encourages coastal shipping and inland waterways transport.
IV. It is completely funded by the World Bank with no domestic capital.

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Which of the above statements are correct?
(A) I, II and III
(B) I, III and IV
(C) I and II
(D) II and IV
(E) Answer not known

50. Which of the following statements is incorrect concerning major ports in India?
(A) Major ports are administered by the Central Government under the Major Port Trusts Act, 1963.
(B) Jawaharlal Nehru Port Trust (JNPT) is the largest container port in India.
(C) Minor ports are entirely owned and operated by the Inland Waterways Authority of India.
(D) Kandla port is a tidal port located in the Gulf of Kutch.
(E) Answer not known

51. What is the fundamental concept behind "Port-led development" as envisioned in India's coastal economy plans?
(A) Developing industrial clusters near ports to lower costs and boost competitiveness.
(B) Relocating all manufacturing industries directly onto the port docks to save space.
(C) Shifting administrative capitals to port cities to centralize regional governance.
(D) Replacing all road and rail networks with coastal shipping vessels for trade.
(E) Answer not known

52. Consider the following features associated with inland water transport in India:
I. It is the cheapest mode of transport for bulk cargo.
II. It is highly fuel-efficient and environmentally friendly.
III. It faces challenges due to seasonal fluctuations in river water levels.
IV. It connects landlocked states seamlessly without road intervention.
V. It has a high initial capital requirement but low maintenance cost.
Which of the above represent correct aspects of India's inland waterways?
(A) I, II, III and V
(B) I, II, IV and V
(C) II, III and IV
(D) I, IV and V
(E) Answer not known

53. How is the Inland Waterways Authority of India (IWAI) defined in terms of its mandate?
(A) A statutory body developing and regulating inland waterways for shipping and navigation.
(B) A private corporation managing ferry services across diverse coastal cities in India.
(C) An international tribunal settling maritime boundary disputes between sovereign nations.
(D) A regulatory body overseeing the operations of all major seaports on the coastline.
(E) Answer not known

54. Match the Major Ports of India (List I) with their defining characteristic (List II):
List I: (Major Ports of India)
P. Mumbai Port
Q. Vishakhapatnam Port
R. Kolkata Port
S. Chennai Port
List II: (Defining characteristic)
I. Deepest landlocked and protected port
II. Riverine port
III. Oldest artificial port on the east coast
IV. Largest natural port in India
(A) P-IV, Q-I, R-II, S-III
(B) P-I, Q-IV, R-III, S-II
(C) P-IV, Q-II, R-I, S-III
(D) P-II, Q-III, R-IV, S-I
(E) Answer not known

55. Consider the following major seaports:
I. Paradip
II. Vishakhapatnam
III. Kolkata (Haldia)
IV. Chennai
Which of the following represents the correct geographical sequence of these ports from North to South along the eastern coast of India?
(A) III, I, II, IV
(B) I, III, II, IV
(C) III, II, I, IV
(D) II, I, III, IV
(E) Answer not known

56. Which of the following is not a recognized major port under the control of the Central Government of India?

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(A) Mormugao
(B) Ennore (Kamarajar)
(C) Mundra
(D) New Mangalore
(E) Answer not known

57. What is a key advantage of utilizing pipeline transport over road or rail for the movement of petroleum products?
(A) Pipelines can be easily rerouted temporarily during unexpected political strikes.
(B) It allows for the simultaneous transport of passengers alongside various cargo.
(C) The initial installation cost of pipelines is the lowest among all transport modes.
(D) It reduces carbon emissions and eliminates transit losses or operational delays.
(E) Answer not known

58. The following question consists of two statements — one labelled as Assertion (A) and the other as Reason (R). Examine these two statements carefully and select the correct answer using the codes given below.
Assertion (A): Despite having a long coastline, India's coastal shipping accounts for a relatively low share of domestic freight.
Reason (R): High port charges, lack of first and last-mile connectivity, and inadequate port draft have hindered its growth.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

59. Which of the following pairs of pipeline networks and their primary operator is correctly matched?
(A) Salaya-Mathura Pipeline - ONGC
(B) Naharkatia-Nunmati-Barauni Pipeline - Reliance Industries
(C) Kandla-Bhatinda Pipeline - Adani Gas
(D) Hazira-Vijaipur-Jagdishpur (HVJ) Pipeline - GAIL (India) Limited
(E) Answer not known

60. Based on the objectives of the Sagarmala programme, what can be inferred about the future of India's logistics costs?
(A) Logistics costs are expected to decrease by optimizing modal mix and reducing inland transport distances.
(B) Logistics costs will increase due to heavy taxation on coastal trade.
(C) Logistics costs will remain unchanged as maritime transport is independent of domestic freight.
(D) Port-led development will shift the logistics burden entirely to the aviation sector.
(E) Answer not known

61. Which was the first cross-country natural gas pipeline established in India?
(A) Hazira-Vijaipur-Jagdishpur (HVJ) pipeline
(B) Mumbai High-Uran pipeline
(C) Jamnagar-Loni pipeline
(D) Kandla-Bhatinda pipeline
(E) Answer not known

62. Consider the following statements regarding pipeline transport in India:
I. It is highly suitable for transporting crude oil, petroleum products, and natural gas.
II. It requires continuous human intervention for daily operational movement of goods.
III. It can be laid over difficult terrains as well as under water.
Which of the above statements is/are correct?
(A) I and III
(B) I and II
(C) II and III
(D) I only
(E) Answer not known

63. Which of the following statements about the postal services in India is correct?
(A) The Indian postal network is the largest in the world.
(B) Speed Post services are restricted exclusively to urban metropolitan areas.
(C) India Post does not offer any financial or banking services.
(D) The postal index number (PIN) code consists of seven digits.
(E) Answer not known

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List II: (Geographical significance)
I. Serves the central region and has high NRI passenger traffic from Southeast Asia
II. Gateway to the southern districts and major pilgrimage tourism
III. Serves the western industrial and textile hub
IV. Primary gateway to South India and a major cargo hub
(A) P-IV, Q-III, R-II, S-I
(B) P-I, Q-II, R-III, S-IV
(C) P-IV, Q-II, R-III, S-I
(D) P-III, Q-IV, R-I, S-II
(E) Answer not known

105. The following question consists of two statements — one labelled as Assertion (A) and the other as Reason (R). Examine these two statements carefully and select the correct answer using the codes given below.
Assertion (A): V.O. Chidambaranar Port (Tuticorin) is a highly significant port for Tamil Nadu's energy and industrial sector.
Reason (R): It handles a massive volume of coal imports essential for the thermal power plants located in the southern districts.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

106. Consider the following major seaports in Tamil Nadu:
I. Kamarajar Port (Ennore)
II. Chennai Port
III. V.O. Chidambaranar Port (Tuticorin)
Which of the following represents the correct geographical sequence of these ports from North to South?
(A) I, II, III
(B) II, I, III
(C) III, II, I
(D) II, III, I
(E) Answer not known

107. Which of the following statements regarding the port of Nagapattinam is incorrect?
(A) It is classified as a minor port in Tamil Nadu.
(B) It is the deepest naturally formed port in India, surpassing Vishakhapatnam.
(C) It facilitates passenger ferry services to Sri Lanka.
(D) It plays a role in handling edible oil and general cargo.
(E) Answer not known

108. Which of the following pairs is correctly matched regarding Tamil Nadu ports and their primary function or characteristic?
(A) Chennai Port - Artificial, all-weather port with a dedicated car export terminal.
(B) Kamarajar Port - Exclusively handles agricultural exports from the southern states.
(C) Kattupalli Port - Major naval base of the Eastern Command of the Indian Navy.
(D) Colachel Port - Largest natural gas extraction platform in the territorial state.
(E) Answer not known

109. Consider the following factors contributing to Chennai's status as a major logistics hub:
I. Presence of three major seaports in its vicinity (Chennai, Ennore, Kattupalli).
II. A large international airport with extensive air cargo facilities.
III. Well-connected Golden Quadrilateral road network and major rail yards.
IV. Complete reliance on inland river transport for domestic distribution.
Which of the above are correct?
(A) I, II and III
(B) I, III and IV
(C) II, III and IV
(D) I and II
(E) Answer not known

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110. How are ports structurally classified in Tamil Nadu based on administration?
(A) Tidal ports and Riverine ports located along the diverse coastline of the state.
(B) Defence ports and Civilian ports used for various commercial or military needs.
(C) Major ports (Central Government) and Minor/Intermediate ports (TN Maritime Board).
(D) East coast ports and West coast ports serving different international trade routes.
(E) Answer not known

(B) Terrestrial network operators and Submarine cable operators in maritime zones.
(C) Digital network operators and Analog network operators in various urban regions.
(D) Public sector entities like BSNL and private sector firms like Jio or Airtel.
(E) Answer not known

71. What is the central concept underlying the optical fibre network expansion in India?
(A) Utilizing light signals to transmit large amounts of data quickly over long distances.
(B) Transmitting data through electrical pulses over copper wires for short distances.
(C) Creating an interconnected grid of low-earth orbit satellites for global coverage.
(D) Broadcasting radio waves using terrestrial towers to provide wireless signals.
(E) Answer not known

72. Consider the following milestones in India's communication history:
I. Introduction of the PIN code system.
II. Launch of Speed Post.
III. Establishment of Telecom Regulatory Authority of India (TRAI).
IV. Launch of the Digital India campaign.
V. Rollout of commercial 5G services.
Which of the following represents the correct chronological order of these milestones from earliest to latest?
(A) I, II, III, IV, V
(B) I, III, II, IV, V
(C) II, I, III, V, IV
(D) III, II, I, IV, V
(E) Answer not known

73. Which of the following best defines "Teledensity"?
(A) The number of telephone connections per square kilometre of an area.
(B) The ratio of mobile phones to landline connections in a state.
(C) The percentage of geographical area covered by 4G cellular networks.
(D) The number of telephone connections for every hundred individuals living within an area.
(E) Answer not known

74. Match the pillars of Digital India (List I) with their primary focus (List II):
List I: (Pillars of Digital India)
P. Broadband Highways
Q. e-Kranti
R. Universal Access to Mobile Connectivity
S. e-Governance
List II: (Primary focus)
I. Electronic delivery of services (health, education, etc.)
II. High-speed internet connectivity across the country
III. Reforming government through technology
IV. Ensuring mobile network availability in all villages
(A) P-II, Q-I, R-IV, S-III
(B) P-II, Q-III, R-I, S-IV
(C) P-I, Q-II, R-III, S-IV
(D) P-IV, Q-I, R-II, S-III
(E) Answer not known

75. Consider the following states in India:
I. Maharashtra
II. Andhra Pradesh
III. Sikkim
IV. Tamil Nadu
Which of the following represents the correct sequence of these states in descending order of their total internet subscriber base?
(A) I, IV, II, III
(B) I, II, IV, III
(C) IV, I, II, III
(D) II, I, IV, III
(E) Answer not known

76. Which of the following is not a primary objective of the BharatNet project?
(A) Establishing sovereign internet protocols isolated from the global web.
(B) Connecting all Gram Panchayats with high-speed broadband connectivity.
(C) Facilitating e-governance and e-health services in diverse rural areas.
(D) Bridging the digital divide between rural and urban populations in India.
(E) Answer not known

77. What is the major advantage of optical fibre cables (OFC) over traditional copper cables in telecommunications?
(A) OFCs provide higher bandwidth and are

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64. Match the communication entities (List I) with their primary functions or descriptions (List II):
List I: (Communication entities)
P. India Post
Q. BSNL
R. TRAI
S. DGCA
List II: (Primary functions or descriptions)
I. Regulates telecommunication tariffs and policies
II. State-owned telecommunications enterprise
III. Largest postal network offering mail and financial services
IV. Regulates civil aviation
(A) P-III, Q-II, R-I, S-IV
(B) P-II, Q-III, R-I, S-IV
(C) P-III, Q-I, R-II, S-IV
(D) P-I, Q-II, R-III, S-IV
(E) Answer not known

65. The following question consists of two statements — one labelled as Assertion (A) and the other as Reason (R). Examine these two statements carefully and select the correct answer using the codes given below.
Assertion (A): The Digital India programme aims to transform India into a digitally empowered society and knowledge economy.
Reason (R): It focuses solely on providing free mobile devices to all citizens living below the poverty line.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

66. Consider the following phases of telecommunication technology in India:
I. Telegraph
II. Analog fixed-line
III. 2G mobile networks
IV. 4G/5G mobile broadband
Which of the following represents the correct evolutionary sequence of these technologies in India?
(A) I, II, III, IV
(B) II, I, IV, III
(C) III, I, II, IV
(D) I, IV, II, III
(E) Answer not known

67. Which of the following statements is incorrect regarding the BharatNet project?
(A) The project relies primarily on satellite communication rather than optical fibre cables.
(B) It aims to provide high-speed broadband connectivity to all Gram Panchayats in India.
(C) It is funded by the Universal Service Obligation Fund (USOF).
(D) It serves as the infrastructure backbone for delivering e-governance services in rural areas.
(E) Answer not known

68. Which of the following pairs is incorrectly matched in the context of Indian communication?
(A) Speed Post - Time-bound express mail service
(B) India Post Payments Bank - Provides direct benefit transfers and banking services
(C) PIN Code - Identifies specific geographic post office jurisdictions
(D) BSNL - Private sector telecommunication monopoly
(E) Answer not known

69. Consider the following components of the Digital India programme:
I. Digital infrastructure as a core utility to every citizen.
II. Governance and services on demand.
III. Digital empowerment of citizens.
IV. Mandatory replacement of all physical transport with virtual reality commuting.
Which of the above are correct vision areas of the programme?
(A) I, II and III
(B) II, III and IV
(C) I and II
(D) I and III
(E) Answer not known

70. How can the telecommunication operators in India be broadly classified based on ownership?
(A) Central government operators and State government operators across the country.

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84. Match the public transport entities in Tamil Nadu (List I) with their operational focus (List II):
List I: (Public transport entities in Tamil Nadu)
P. MTC (Metropolitan Transport Corporation)
Q. SETC (State Express Transport Corporation)
R. TNSTC
S. CMRL
List II: (Operational focus)
I. Long-distance express bus services across states
II. Chennai urban bus network
III. Chennai Metro Rail operations
IV. Inter-city and district bus services within the state
(A) P-II, Q-I, R-IV, S-III
(B) P-I, Q-II, R-IV, S-III
(C) P-II, Q-IV, R-I, S-III
(D) P-III, Q-I, R-IV, S-II
(E) Answer not known

85. The following question consists of two statements — one labelled as Assertion (A) and the other as Reason (R). Examine these two statements carefully and select the correct answer using the codes given below.
Assertion (A): Chennai Central and Chennai Egmore are the two most crucial railway terminals in Tamil Nadu.
Reason (R): Chennai Central primarily handles North and West bound inter-state trains, while Egmore serves as the main hub for intra-state south-bound trains.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

86. Consider the following operational corridors of Chennai Metro Rail Phase 1:
I. Blue Line (Wimco Nagar to Airport)
II. Green Line (Central to St. Thomas Mount)
Which of the following represents the correct sequence of these corridors?
(A) I and II
(B) II and I
(C) I only
(D) II only
(E) Answer not known

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87. Which of the following statements about the Mass Rapid Transit System (MRTS) in Chennai is incorrect?
(A) It connects Chennai Beach to Velachery.
(B) It is entirely underground, similar to standard metro rail systems.
(C) It is an elevated urban railway line operated by the Southern Railway.
(D) It functions as a crucial commuter rail service parallel to the eastern coast of the city.
(E) Answer not known

88. Which of the following pairs of National Highways in Tamil Nadu and their connectivity is correctly matched?
(A) NH 48 - Connects Chennai to Kanyakumari strictly along the east coast
(B) NH 32 - Connects Coimbatore to Madurai
(C) NH 44 - Connects Hosur to Kanyakumari traversing north-south
(D) NH 83 - Connects Tiruchirappalli to Chennai
(E) Answer not known

89. Consider the following statements regarding the Southern Railway zone:
I. Its headquarters is located in Chennai.
II. It covers the states of Tamil Nadu, Kerala, Puducherry, and minor parts of Andhra Pradesh.
III. It was created in 1951, making it one of the earliest railway zones formed in independent India.
IV. It solely operates narrow gauge lines.
Which of the above statements are correct?
(A) I, II and III
(B) I, III and IV
(C) II, III and IV
(D) I and II
(E) Answer not known

90. Which of the following correctly classifies major railway junctions in Tamil Nadu?
(A) Kanyakumari is the central junction connecting all eastern and western lines.
(B) Ooty is the busiest broad-gauge junction for all commercial trains in the state.
(C) Erode, Trichy, and Madurai facilitate train

reversals and branch line diversions.
(D) Velachery is the primary junction for all inter-state freight and cargo trains.
(E) Answer not known

91. What is the primary concept driving the development of the Chennai Peripheral Ring Road (CPRR)?
(A) To construct an underground tunnel network connecting all Chennai Metro stations.
(B) To create a dedicated tourism corridor along the length of the Marina beach area.
(C) To replace the existing suburban railway system with a circular monorail network.
(D) To allow heavy vehicles to access the port without entering Chennai city limits.
(E) Answer not known

92. Consider the following features of urban mobility in Chennai:
I. Presence of extensive MTC bus network.
II. Operational Suburban EMU train services.
III. Elevated MRTS lines.
IV. Expanding Metro Rail network.
V. Extensive inland water ferry system dominating commuter traffic.
Which of the above accurately describe Chennai's current active mass transit ecosystem?
(A) I, II, III and IV
(B) I, II, IV and V
(C) II, III, IV and V
(D) I, III, IV and V
(E) Answer not known

93. How does a District Road differ from a State Highway in Tamil Nadu?
(A) State Highways connect cities, while District Roads connect local production areas.
(B) District roads are maintained by the NHAI, whereas State Highways are maintained by local panchayats.
(C) State Highways are unpaved, whereas District Roads are always multi-lane expressways.
(D) There is no structural or administrative difference between these two road types.
(E) Answer not known

94. Match the railway services/infrastructure in Tamil Nadu (List I) with their unique feature (List II):
List I: (Railway services/infrastructure in Tamil Nadu)
P. Nilgiri Mountain Railway
Q. Vande Bharat Express (Chennai-Mysuru)
R. ICF (Integral Coach Factory)
S. Royapuram Railway Station
List II: (Unique feature)
I. Oldest surviving railway station structure in India
II. UNESCO World Heritage Site
III. Premier passenger coach manufacturing unit
IV. Indigenous semi-high-speed train
(A) P-II, Q-IV, R-III, S-I
(B) P-II, Q-I, R-IV, S-III
(C) P-IV, Q-II, R-I, S-III
(D) P-I, Q-IV, R-II, S-III
(E) Answer not known

95. Consider the following cities in Tamil Nadu:
I. Coimbatore
II. Chennai
III. Madurai
Which of the following represents the correct chronological sequence of these cities in adopting or proposing a modern Metro Rail transit system?
(A) II, I, III
(B) I, II, III
(C) II, III, I
(D) III, II, I
(E) Answer not known

96. Which of the following is not an objective of the Chennai Metro Rail Phase 2 expansion?
(A) To connect the core city with the rapidly expanding IT corridors and suburbs.
(B) To reduce greenhouse gas emissions by shifting commuters from private transport to public transit.
(C) To completely replace and dismantle the existing MTC bus fleet.
(D) To provide seamless multi-modal integration with suburban rail and bus termini.
(E) Answer not known

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97. What is a key environmental and economic advantage of inducting electric buses into the MTC fleet in Chennai?
(A) They run faster than metro trains on the most congested roads during peak hours.
(B) They do not require any maintenance or charging infrastructure for daily operations.
(C) They carry double the number of passengers than standard articulated buses.
(D) They have zero tailpipe emissions and lower running costs compared to diesel buses.
(E) Answer not known

98. The following question consists of two statements — one labelled as Assertion (A) and the other as Reason (R). Examine these two statements carefully and select the correct answer using the codes given below.
Assertion (A): The Tamil Nadu State Transport Corporation (TNSTC) plays a pivotal role in ensuring inclusive growth across the state.
Reason (R): TNSTC provides affordable and reliable connectivity to remote villages, facilitating access to education, healthcare, and employment in urban centers.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

99. Which pair representing transport projects in Tamil Nadu is incorrectly matched?
(A) East Coast Road (ECR) - Scenic coastal highway connecting Chennai and Cuddalore
(B) Chennai Port-Maduravoyal Expressway - An underground metro tunnel exclusively for passengers
(C) Chennai Outer Ring Road - Connects Vandalur to Minjur
(D) Pamban Bridge - Railway bridge connecting Rameswaram island to mainland
(E) Answer not known

100. From the integration of MRTS, Metro Rail, and Suburban rail in Chennai, what can be logically inferred about the city's urban transport policy?
(A) The policy favors building more parking spaces for private cars over public transit.
(B) The city relies entirely on centrally funded aviation for its daily commutes.
(C) The city plans to abolish all road transport systems within the coming decade.
(D) Efforts focus on building a multi-modal network to ensure seamless commuter mobility.
(E) Answer not known

101. How many operational international airports are currently located in Tamil Nadu?
(A) Two
(B) Three
(C) Four
(D) Five
(E) Answer not known

102. Consider the following statements regarding the Chennai International Airport:
I. It is the fourth busiest airport in India in terms of passenger traffic.
II. It serves as the southern regional headquarters for the Airports Authority of India (AAI).
III. It handles only domestic flights, with international flights rerouted to Bengaluru.
Which of the above statements is/are correct?
(A) I and II
(B) II and III
(C) I and III
(D) I only
(E) Answer not known

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103. Which of the following statements about Kamarajar Port (Ennore) is correct?
(A) It is the first corporate port in India, registered as a public company.
(B) It is the oldest natural port in India.
(C) It was primarily built to handle passenger cruise ships.
(D) It is administered directly by the Indian Navy.
(E) Answer not known

104. Match the Airports in Tamil Nadu (List I) with their geographical significance (List II):
List I: (Airports in Tamil Nadu)
P. Chennai International Airport
Q. Coimbatore International Airport
R. Madurai International Airport
S. Tiruchirappalli International Airport

immune to electromagnetic interference.
(B) OFCs are heavier and more durable against physical theft in urban environments.
(C) OFCs are easier to splice and require no specialized equipment for installation.
(D) OFCs transmit electrical currents more efficiently over short ranges of distance.
(E) Answer not known

78. The following question consists of two statements — one labelled as Assertion (A) and the other as Reason (R). Examine these two statements carefully and select the correct answer using the codes given below.
Assertion (A): The subscriber base of landline connections in India has seen a continuous decline over the last decade.
Reason (R): The rapid proliferation of affordable mobile telephony and wireless broadband has made traditional landlines less attractive for individual consumers.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

79. Which of the following pairs regarding telecom policies and achievements is correctly matched?
(A) India Post Payments Bank - Government-owned company providing accessible banking.
(B) Universal Service Obligation Fund (USOF) - Funds military satellite programs.
(C) TRAI - Manufactures mobile hardware for BSNL and other state-owned enterprises.
(D) Videsh Sanchar Nigam Limited (VSNL) - Currently the largest private telecom operator.
(E) Answer not known

80. What can be inferred from the transition of government services to digital platforms under e-Kranti?
(A) The rural population will be entirely excluded from governance.
(B) Postal services will completely shut down within a year.
(C) Physical transport needs for accessing basic administrative services will substantially decrease.
(D) The requirement for optical fibre networks will diminish.
(E) Answer not known

81. Which entity is specifically responsible for the implementation of major IT Expressway and road infrastructure projects in Tamil Nadu, such as the Rajiv Gandhi Salai (OMR)?
(A) National Highways Authority of India (NHAI)
(B) Chennai Metropolitan Development Authority (CMDA)
(C) Public Works Department (PWD) of Central Government
(D) Tamil Nadu Road Development Company (TNRDC)
(E) Answer not known

82. Consider the following statements regarding the State Highways in Tamil Nadu:
I. They connect district headquarters with important towns and National Highways.
II. They are constructed and maintained primarily by the Tamil Nadu State Highways Department.
III. Tamil Nadu has the lowest density of State Highways in India.
Which of the above statements is/are correct?
(A) I and II
(B) II and III
(C) I and III
(D) I only
(E) Answer not known

83. Which of the following statements about the Tamil Nadu State Transport Corporation (TNSTC) is correct?
(A) It is a major state-owned bus operator connecting inter-city and rural routes.
(B) It exclusively operates bus services within the Chennai metropolitan area limits.
(C) It has completely replaced its fleet with electric buses across all rural districts.
(D) It is a private entity contracted by the state government for a 10-year lease.
(E) Answer not known

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111. What is the significance of the LNG (Liquefied Natural Gas) terminal established at the Kamarajar Port (Ennore)?
(A) It provides cleaner energy, supporting the transition to a gas-based economy.
(B) It replaces all coal consumption in the state immediately for power generation.
(C) It is used exclusively to fuel aircraft at the Chennai International Airport.
(D) It was built primarily to export natural gas to various Middle Eastern countries.
(E) Answer not known

112. Consider the following statements about the Buckingham Canal:
I. It is a freshwater, naturally formed river.
II. It is an artificial, saltwater navigation canal running parallel to the Coromandel Coast.
III. Historically, it was extensively used for the transport of goods like firewood and salt.
IV. Its navigational utility has severely declined in modern times due to urban encroachment and pollution.
V. It connects Kakinada in Andhra Pradesh to Villupuram district in Tamil Nadu.
Which of the above statements are historically and factually correct?
(A) II, III, IV and V
(B) I, II, III and IV
(C) I, III, IV and V
(D) II, IV and V
(E) Answer not known

113. What is meant by a "Corporate Port" in the context of Indian maritime infrastructure, as exemplified by Kamarajar Port?
(A) A port managed entirely by a foreign multinational corporation based in Europe.
(B) A port owned by local fishermen cooperatives in the southern coastal districts.
(C) A port that strictly prohibits the docking of any government-owned vessels.
(D) A public limited company port with greater administrative and financial autonomy.
(E) Answer not known

114. Match the infrastructure developments (List I) with their primary location/impact area in Tamil Nadu (List II):
List I: (Infrastructure developments)
P. Multi-Modal Logistics Park (MMLP)
Q. Defence Industrial Corridor node
R. Major auto-export hub
S. Major IT/ITES corridor
List II: (Primary location/impact area in Tamil Nadu)
I. Mappedu (near Chennai)
II. Tiruchirappalli
III. Chennai Port
IV. Rajiv Gandhi Salai (OMR)
(A) P-I, Q-II, R-III, S-IV
(B) P-II, Q-I, R-IV, S-III
(C) P-III, Q-IV, R-I, S-II
(D) P-I, Q-III, R-II, S-IV
(E) Answer not known

115. Consider the following major ports of Tamil Nadu:
I. Chennai Port
II. Kamarajar Port (Ennore)
III. V.O. Chidambaranar Port (Tuticorin)
Which of the following represents the correct sequence of these ports in descending order of their total cargo handling capacity?
(A) I, II, III
(B) I, III, II
(C) II, I, III
(D) III, II, I
(E) Answer not known

116. Which of the following is not a feature associated with the Chennai Port?
(A) It is the second largest container port in India.
(B) It handles a significant portion of automobiles manufactured in South India for export.
(C) It faces challenges related to urban traffic congestion during cargo evacuation.
(D) It was constructed during the post-independence era in the 1960s.
(E) Answer not known

117. What is the primary advantage of establishing Multi-Modal Logistics Parks (MMLPs) in Tamil Nadu?
(A) They lower costs and time by facilitating freight transfer between road, rail, and sea.
(B) They aim to centralize all agricultural production within a single industrial park.
(C) They serve as tax havens for international IT companies operating in the region.

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ANSWERS

1. (D) It connects production and consumption centers by moving goods and people.
Transport systems play a vital role in economic development by facilitating the movement of raw materials to industries and finished goods to markets. This connectivity ensures that production and consumption centers are linked efficiently, promoting trade and commercial growth. Additionally, it enables the mobility of people, which is essential for labor market participation and regional economic integration.

2. (A) I and III
Road transport is highly valued for providing door-to-door service and acting as a feeder to other modes like rail and air. It is particularly suitable for short and medium distances due to its flexibility. Unlike railways, roads generally require lower capital investment for construction, making the second statement incorrect while the first and third remain factually valid.

3. (C) Around 63 lakh kilometres
India possesses one of the largest road networks globally, spanning approximately sixty-three lakh kilometres as per recent governmental classifications. This extensive network includes national highways, state highways, district roads, and rural roads. Such infrastructure is crucial for supporting the country's diverse economic activities and ensuring connectivity across both major urban centers and the most remote rural areas.

4. (A) P-II, Q-IV, R-III, S-I
The National Highway numbering system follows a specific logic where even-numbered highways run north to south and odd-numbered ones run east to west. Three-digit numbers represent secondary routes or branches of main highways. Suffixes like 'A', 'B', or 'C' indicate further extensions or branches of these secondary routes, ensuring a systematic identification of the vast national network.

5. (C) A is true but R is false.
The Golden Quadrilateral is a massive highway project connecting Delhi, Mumbai, Chennai, and Kolkata, which significantly reduced travel time and transit costs between these metropolitan cities. However, the project is a road network consisting of four and six-lane expressways, not a high-speed railway network. Therefore, the assertion regarding time reduction is accurate, but the reason provided is incorrect.

6. (A) Maharashtra, Uttar Pradesh, Rajasthan, Madhya Pradesh
Maharashtra currently holds the largest share of the National Highway network in India, followed by Uttar Pradesh, Rajasthan, and Madhya Pradesh. This ranking reflects the extensive infrastructure development undertaken in these states to support industrial growth and interstate connectivity. Maintaining a robust highway network is essential for these large states to facilitate efficient freight movement and overall economic integration.

7. (A) The North-South corridor connects Srinagar in Jammu & Kashmir to Kanyakumari in Tamil Nadu.
The North-South corridor is designed to connect Srinagar in Jammu and Kashmir to Kanyakumari in Tamil Nadu, spanning the entire length of the country. Conversely, the East-West corridor links Silchar in Assam to Porbandar in Gujarat. These major highway projects are primarily managed by the National Highways Authority of India rather than being handled by individual state-level departments.

8. (D) District Roads - Zila Parishad
Roads in India are categorized based on their administrative and maintenance responsibilities. National Highways are managed by the Central Government through the National Highways Authority of India. State Highways fall under the State Public Works Department. District roads are typically the responsibility of the Zila Parishad, while rural roads are often managed by local panchayats and specific rural schemes.

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(B) P-IV, Q-II, R-I, S-III
(C) P-II, Q-III, R-IV, S-I
(D) P-I, Q-IV, R-II, S-III
(E) Answer not known

125. The following question consists of two statements — one labelled as Assertion (A) and the other as Reason (R). Examine these two statements carefully and select the correct answer using the codes given below.
Assertion (A): The implementation of the BharatNet project through TANFINET in Tamil Nadu is critical for bridging the rural-urban digital divide.
Reason (R): It enables the delivery of e-governance, telemedicine, and digital education to remote Gram Panchayats.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

126. Consider the following mass transit systems in Chennai:
I. Suburban EMU
II. MRTS
III. Metro Rail Phase 1
Which of the following represents the correct chronological sequence of their introduction in Chennai?
(A) I, II, III
(B) II, I, III
(C) III, I, II
(D) I, III, II
(E) Answer not known

127. Which of the following statements regarding communication infrastructure in Tamil Nadu is incorrect?
(A) The state government does not utilize any e-governance portals for citizen services.
(B) Tamil Nadu possesses multiple international submarine cable landing stations in Chennai.
(C) The state relies heavily on BSNL and private operators for mobile networks.
(D) Optic fibre network expansion is a key priority for the state's IT department.
(E) Answer not known

128. Which of the following pairs of transport/ governance apps and their purpose in Tamil Nadu is correctly matched?
(A) Chennai Metro Rail App - Booking suburban EMU tickets only
(B) Uzhavan App - Tracking MTC buses in real-time
(C) Chalo App - Live tracking and ticketing for Chennai MTC buses
(D) TN e-Sevai - Booking domestic flight tickets
(E) Answer not known

129. Consider the following projected impacts of the Chennai Peripheral Ring Road (CPRR):
I. Improved connectivity between Ennore port and industrial clusters like Sriperumbudur.
II. Significant reduction of heavy truck traffic within core Chennai city limits.
III. Complete cessation of rail freight traffic.
IV. Enhancement of logistical efficiency in the region.
Which of the above statements are correct?
(A) I, II and IV
(B) I, II and III
(C) II, III and IV
(D) I and IV
(E) Answer not known

130. Under the Smart City Mission in Tamil Nadu, which of the following is categorized as a sustainable urban mobility initiative?
(A) Expanding the construction of fossil-fuel power plants inside the core city limits.
(B) Banning public transport to encourage private car ownership among all citizens.
(C) Implementation of NMT infrastructure like pedestrian plazas and cycling tracks.
(D) Dismantling existing metro rail networks to build new high-speed highway systems.
(E) Answer not known

131. What is the economic concept driving the development of the "Chennai-Kanyakumari Industrial Corridor" (CKIC)?
(A) Leveraging East Coast connectivity to establish manufacturing and industrial clusters.
(B) Concentrating all state industries exclusively in Kanyakumari for export purposes.

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(D) They replace the need for major seaports by handling trade via air transport only.
(E) Answer not known

118. The following question consists of two statements — one labelled as Assertion (A) and the other as Reason (R). Examine these two statements carefully and select the correct answer using the codes given below.
Assertion (A): The inland water transport potential in Tamil Nadu is highly underutilized compared to states like Kerala or West Bengal.
Reason (R): Most rivers in Tamil Nadu are non-perennial and heavily reliant on monsoon rainfall, making year-round navigation difficult.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

119. Which of the following pairs concerning the airports of Tamil Nadu is incorrectly matched?
(A) Tiruchirappalli Airport - Tambaram
(B) Chennai Airport - Meenambakkam
(C) Madurai Airport - Avaniyapuram
(D) Coimbatore Airport - Peelamedu
(E) Answer not known

120. From the expansion of Kamarajar Port and Kattupalli Port near Chennai, what can be inferred about regional industrialization?
(A) The region is de-industrializing to focus purely on tourism and hospitality.
(B) Port expansion will severely restrict the development of urban IT corridors.
(C) Port activities are scaling down due to a lack of international export demand.
(D) Industries are shifting to northern Chennai to leverage port-led logistics.
(E) Answer not known

121. According to recent data, how does the telecom density of Tamil Nadu compare to the national average of India?
(A) It is significantly lower than the national average.
(B) It is consistently higher than the national average, reflecting strong digital penetration.
(C) It is equal to the national average.
(D) Tamil Nadu has the lowest telecom density among the southern states.
(E) Answer not known

122. Consider the following statements regarding the proposed Chennai-Bengaluru Expressway:
I. It is an access-controlled expressway designed to reduce travel time between the two metropolises.
II. It is part of the Bharatmala Pariyojana.
III. It completely bypasses the state of Andhra Pradesh.
Which of the above statements is/are correct?
(A) I and II
(B) II and III
(C) I and III
(D) I only
(E) Answer not known

123. Which of the following statements about internet penetration in Tamil Nadu is correct?
(A) Internet connectivity is strictly limited to Chennai and Coimbatore urban centers.
(B) The state government has banned the laying of optical fibre cables in rural districts.
(C) Mobile internet usage has dropped due to the preference for traditional telegraph.
(D) The state has high internet subscription rates, bolstered by the BharatNet initiative.
(E) Answer not known

124. Match the proposed/ongoing infrastructure projects in Tamil Nadu (List I) with their primary objectives (List II):
List I: (Proposed/ongoing infrastructure projects in Tamil Nadu)
P. Chennai Peripheral Ring Road
Q. Chennai-Bengaluru Expressway
R. Chennai Port-Maduravoyal Expressway
S. BharatNet Tamil Nadu (TANFINET)
List II: (Primary objectives)
I. Connect all village panchayats with high-speed optical fibre
II. Decongest Chennai city by diverting bypass traffic
III. Provide a dedicated elevated freight corridor for port bound vehicles
IV. Reduce inter-state travel time and boost the industrial corridor
(A) P-II, Q-IV, R-III, S-I

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138. The following question consists of two statements — one labelled as Assertion (A) and the other as Reason (R). Examine these two statements carefully and select the correct answer using the codes given below.

Assertion (A): The transport and communication sector contributes significantly to the Gross State Domestic Product (GSDP) of Tamil Nadu.

Reason (R): An efficient logistics and communication network is a prerequisite for sustaining the state's large manufacturing base and IT services export.

(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

139. Which pair correctly matches an IT corridor with its corresponding arterial road in Chennai?
(A) Cyberabad Corridor - East Coast Road (ECR)
(B) FinTech Corridor - Chennai Bypass
(C) Startup Hub - Inner Ring Road
(D) IT Expressway - Rajiv Gandhi Salai (OMR)
(E) Answer not known

140. Given the Tamil Nadu government's Electric Vehicle (EV) policy and focus on replacing the MTC fleet, what can be inferred about the future of urban mobility in the state?
(A) A strategic transition to decarbonize transport and reduce fossil fuel dependency.
(B) The state will abandon public transport in favor of private EVs for all citizens.
(C) The state intends to stop expanding the metro rail network in the coming years.
(D) The state will rely exclusively on solar-powered inland ferries for urban travel.
(E) Answer not known

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areas and individual warehouses. This makes road transport highly efficient for short-distance deliveries and for transporting goods that require careful handling and immediate point-to-point transit without multiple transshipments.

18. (A) Both A and R are true and R is the correct explanation of A.
District and rural roads often suffer from inadequate maintenance compared to National Highways. This disparity exists because local bodies and state governments, who are responsible for these roads, frequently face significant financial deficits. Additionally, a lack of technical expertise at the local level further hampers the quality of upkeep, validating the reason as a direct cause for the observed maintenance issues.

19. (B) Golden Quadrilateral - Connects Delhi, Mumbai, Chennai, Kolkata
The Golden Quadrilateral project is accurately identified as a major highway network connecting the four metropolitan cities of Delhi, Mumbai, Chennai, and Kolkata. In contrast, Bharatmala focuses on highway corridors rather than railways, and Setu Bharatam aims to make national highways free of railway crossings. The North-South corridor connects Srinagar to Kanyakumari, while Porbandar to Silchar is the East-West corridor.

20. (D) It raises agricultural income by improving market access and lowering transit losses.
The expansion of road networks through schemes like the Pradhan Mantri Gram Sadak Yojana significantly boosts the rural economy. By providing all-weather connectivity, these roads improve farmers' access to urban markets, which reduces transit times and physical losses of perishable goods. This leads to higher agricultural income and better integration of rural areas with the broader national economy, enhancing overall social welfare.

21. (B) 1853
The history of Indian Railways began on April 16, 1853, when the first passenger train was inaugurated. This historic journey covered a distance of approximately thirty-four kilometres between Mumbai's Bori Bunder station and Thane. This event marked the beginning of a new era in Indian transportation, eventually leading to one of the world's largest and most complex railway networks spanning the subcontinent.

22. (A) I and III
Indian Railways is the primary mode for transporting bulk freight such as coal, iron ore, and cement, which is essential for industrial growth. It also plays a crucial role in national integration by providing affordable long-distance travel for millions. However, it is one of the world's largest employers, far exceeding the domestic aviation sector in terms of total workforce numbers.

23. (C) 18
Indian Railways is currently organized into eighteen operational zones, which include the Metro Railway in Kolkata. These zones are administrative units that help manage the vast network efficiently across different geographical regions. Each zone is headed by a General Manager and is further divided into various divisions to oversee daily operations, maintenance, and passenger services within their respective jurisdictions.

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24. (A) P-II, Q-I, R-IV, S-III
The headquarters for the Central Railway is located at Mumbai CSMT, while the Southern Railway is based in Chennai. The Eastern Railway is headquartered in Kolkata. For the Western Railway, the headquarters is situated at Mumbai Churchgate. These locations serve as central administrative hubs for managing rail operations and infrastructure development within their respective geographical zones across the country.

25. (A) Both A and R are true and R is the correct explanation of A.
Project Unigauge was launched by Indian Railways with the goal of converting various narrow and metre gauge lines into a uniform broad gauge system. Standardizing the gauge is essential because it eliminates the need for transshipment, where passengers and freight must change trains. This significantly reduces travel time, prevents damage to goods during handling, and lowers overall operational and maintenance costs.

9. (A) I, II and IV
Bharatmala Pariyojana is a comprehensive umbrella program aimed at optimizing the efficiency of freight and passenger movement across India. It focuses on developing economic corridors, inter-corridors, and coastal roads to improve connectivity. Unlike schemes strictly for rural areas, this program targets high-traffic corridors and border roads, making the statement about an exclusive rural focus incorrect while others remain accurate.

10. (C) It solely focuses on connecting major urban centers to national highways.
The Pradhan Mantri Gram Sadak Yojana is a centrally sponsored scheme specifically designed to provide all-weather road connectivity to unconnected rural habitations. It aims to improve access to markets, health services, and education for rural populations. The claim that it focuses solely on connecting urban centers to national highways is incorrect, as its primary mandate is rural development and connectivity.

11. (D) Viability Gap Funding
Viability Gap Funding is a financial mechanism used to support infrastructure projects that are economically justified but lack immediate financial profitability. In road construction, it attracts private investment by providing a one-time grant to cover a portion of the capital costs. This ensures that essential projects, which might not generate sufficient toll revenue initially, can still be completed through public-private partnerships.

12. (A) I, II, III and V
India's road transport sector faces several critical challenges, including inadequate maintenance resulting in potholes and high rates of accidents and fatalities. Severe traffic congestion in metropolitan areas further hampers efficiency, while funding constraints limit the continuous expansion of highways. However, over-reliance on waterways is not a current challenge, as water transport actually accounts for a very small freight share.

13. (B) National Highways, State Highways, District Roads, and Village Roads
The Nagpur Plan of 1943 was a landmark development in Indian infrastructure that classified roads into four distinct categories based on their function and administration. These categories are National Highways, State Highways, District Roads, and Village Roads. This systematic classification provided a framework for organized road development and maintenance across the country, influencing subsequent planning and infrastructure policies for many decades.

14. (B) P-II, Q-IV, R-I, S-III
The Golden Quadrilateral segments vary in length, with the Chennai-Kolkata stretch being the longest at approximately 1,684 kilometres. The Delhi-Mumbai section covers about 1,419 kilometres, while the Mumbai-Chennai segment is roughly 1,290 kilometres. Finally, the Kolkata-Delhi segment spans approximately 1,453 kilometres. These segments together form a high-speed road network connecting the four major metropolitan hubs of the whole country.

15. (B) II, IV, III, I
In terms of total network length in India, rural roads, including those under the Pradhan Mantri Gram Sadak Yojana, comprise the largest share. These are followed by district roads and then state highways. National Highways, while carrying a significant portion of traffic, represent the smallest share of the total road length. This hierarchy highlights the vastness of the local road infrastructure.

16. (C) Complete ban on the production of internal combustion engine vehicles by 2025
India has implemented several measures to improve road transport, such as FASTag for electronic tolling and the Motor Vehicles Amendment Act for safety enforcement. Multi-modal logistics parks are also being developed to ease congestion. However, there is no official policy for a complete ban on the production of internal combustion engine vehicles by the year 2025, making that statement incorrect.

17. (D) It offers flexible, point-to-point and door-to-door delivery services.
The primary advantage of road transport is its unmatched flexibility in providing door-to-door delivery services. Unlike railways, which require fixed tracks and stations, road vehicles can reach specific locations, including remote

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(C) Restricting trade activities to agricultural goods produced in the delta regions.
(D) Developing an underwater road tunnel connecting the entire eastern seaboard area.
(E) Answer not known

132. Consider the following elements of an "Integrated Transport System" aimed for in Chennai:
I. Common Mobility Card (NCMC) for bus, metro, and suburban rail.
II. Physical integration of metro stations with existing railway and bus termini.
III. Coordinated timetabling of different transport modes.
IV. Elimination of pedestrian pathways to widen roads.
V. Unified Metropolitan Transport Authority (CUMTA) for synchronized planning.
Which of the above are valid steps towards transport integration?
(A) I, II, III and V
(B) I, II, IV and V
(C) II, III, IV and V
(D) I, III, IV and V
(E) Answer not known

133. In the context of Tamil Nadu's transport infrastructure projects, what does "Viability Gap Funding" (VGF) mean?
(A) A government grant for projects that are justified but lack financial viability.
(B) A penalty imposed on various private contractors for delayed infrastructure projects.
(C) A tax levied on all daily commuters to fund regional road maintenance and repairs.
(D) A loan taken by the state government from the World Bank for urban development.
(E) Answer not known

134. Match the specific logistics/industrial zones in Tamil Nadu (List I) with their defining characteristic (List II):
List I: (Specific logistics/industrial zones in Tamil Nadu)
P. Sriperumbudur - Oragadam
Q. Tiruppur
R. Thoothukudi
S. Hosur
List II: (Defining characteristic)
I. Major knitwear and textile export cluster
II. Heavy engineering and electronics manufacturing near the border
III. Major automobile and electronics manufacturing hub
IV. Port-based thermal power and chemical industries
(A) P-III, Q-I, R-IV, S-II
(B) P-II, Q-III, R-I, S-IV
(C) P-III, Q-IV, R-I, S-II
(D) P-I, Q-II, R-III, S-IV
(E) Answer not known

135. Consider the following sections of road networks in Tamil Nadu:
I. Chennai to Tindivanam
II. Tindivanam to Tiruchirappalli
III. Tiruchirappalli to Madurai
IV. Madurai to Kanyakumari
Which of the following represents the correct geographical sequence of these sections from North to South?
(A) I, II, III, IV
(B) II, I, IV, III
(C) I, III, II, IV
(D) IV, III, II, I
(E) Answer not known

136. Which of the following is not an infrastructure component supporting the communication network in Tamil Nadu?
(A) Submarine Optical Fibre Cable landing stations
(B) State Wide Area Network (TNSWAN)
(C) Inland Waterways Authority of India (IWAI) hubs
(D) State Data Centre (TNSDC)
(E) Answer not known

137. What is a primary socio-economic advantage of improved rural road connectivity through schemes like PMGSY in Tamil Nadu?
(A) Drastic reduction in agricultural output due to extensive rural land acquisition.
(B) Increased isolation of village panchayats from the main economic urban hubs.
(C) Overcrowding of rural areas with heavy industries that pollute local water sources.
(D) Improved access to schools, healthcare, and local markets for rural populations.
(E) Answer not known

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26. (A) I, II, III
The introduction of modern rail systems in India began with the Metro Rail, first inaugurated in Kolkata in 1984. This was followed much later by the launch of the indigenous semi-high-speed Vande Bharat Express in 2019. The High-Speed Rail or Bullet Train project was launched subsequently and is currently under construction, representing the most recent phase in the technological evolution of Indian rail.

27. (D) They are indigenous, self-propelled, semi-high-speed train sets without a locomotive.
Vande Bharat Express trains are a significant achievement of the Make in India initiative. They are indigenous, self-propelled, semi-high-speed train sets that do not require a separate locomotive, as the traction power is distributed throughout the coaches. These trains are designed for passenger comfort and efficiency on broad-gauge tracks, rather than being focused on freight transport or specific heritage routes.

28. (A) Kavach System - Biometric attendance system for railway staff
The Kavach System is actually an indigenous Automatic Train Protection system designed to prevent collisions and ensure safety, rather than a biometric attendance system for staff. Other projects like the Eastern Dedicated Freight Corridor (Ludhiana to Dankuni), the Western Dedicated Freight Corridor (Dadri to JNPT), and the Mumbai-Ahmedabad High-Speed Rail corridor are correctly identified with their respective routes and purposes.

29. (A) I, II and III
Kavach is an indigenous Automatic Train Protection system that enhances safety by applying brakes automatically if the pilot fails to react, thereby preventing collisions. It uses radio communication to provide continuous updates on movement authority and signal aspects. The claim that it was developed to monitor air-conditioning efficiency is incorrect, as its primary and critical function is ensuring train operational safety.

30. (B) They are being constructed exclusively as narrow-gauge networks to save land acquisition costs.
Dedicated Freight Corridors are designed to decongest passenger rail networks and increase the average speed of goods trains. They utilize electric traction for sustainability. However, they are constructed as broad-gauge networks to ensure compatibility with the existing main rail lines and to allow for heavy hauling capacity, making the statement about them being narrow-gauge networks factually incorrect.

31. (A) It uses the Japanese Shinkansen technology on standard gauge tracks.
The Mumbai-Ahmedabad High-Speed Rail corridor, often referred to as the Bullet Train project, is being developed using Japanese Shinkansen technology. This system will operate on dedicated standard gauge tracks to achieve high speeds of up to 320 kilometres per hour. It does not use Maglev, diesel locomotives, or hyperloop technology, as the Shinkansen system is a proven electric-powered rail technology.

32. (A) I, II, IV and V
Urban Metro rail systems offer numerous benefits, such as reducing traffic congestion and providing a safe, reliable mode of mobility. They have a lower per capita carbon footprint and typically enhance real estate values along their corridors. However, they do not completely eliminate surface road transport; instead, they complement it by providing a high-capacity alternative for city commuters and residents.

33. (A) The distance between the inner sides of two tracks is 1.676 metres.
In the context of Indian Railways, 'Broad Gauge' is defined by a specific track width where the distance between the inner sides of the two parallel rails is exactly 1.676 metres. This is the predominant gauge used across the national network for both passenger and freight services. It allows for higher speeds and greater stability compared to narrower gauge systems used in hills.

34. (A) P-III, Q-I, R-IV, S-II
In India, Broad Gauge tracks are 1.676 metres wide, while Metre Gauge tracks are exactly 1.000 metre wide. Standard Narrow Gauge, often used

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in mountainous regions, measures 0.762 metres. Standard Gauge, commonly adopted for modern Metro Rail systems like those in Chennai and Delhi, is 1.435 metres wide. This variety in gauges reflects the historical and functional diversity of the rail network.

35. (A) II, I, IV, III
When arranged in ascending order of track width, Narrow Gauge (0.762 metres) is the smallest, followed by Metre Gauge (1.000 metre). Standard Gauge, used for metro systems, follows at 1.435 metres. The widest of these is the Broad Gauge, which measures 1.676 metres and is the standard for the majority of the Indian Railways' mainline network across the whole country.

36. (D) Central Equatorial Railway
Indian Railways consists of several administrative zones such as the South Coast Railway, East Central Railway, and North Western Railway. However, there is no such entity as the "Central Equatorial Railway" within the organizational structure of Indian Railways. The zones are generally named based on geographical regions or coastal locations to manage the vast network across the Indian subcontinent efficiently.

37. (A) It reduces dependence on imported fossil fuels and lowers operational costs.
The complete electrification of the broad-gauge network in Indian Railways is a strategic move to reduce dependence on imported diesel and other fossil fuels. This transition significantly lowers operational costs and contributes to environmental sustainability by reducing carbon emissions. While it involves digital signaling, it does not eliminate human pilots or allow freight trains to share urban metro rail tracks.

38. (A) Both A and R are true and R is the correct explanation of A.
Establishing Dedicated Freight Corridors is vital for increasing the share of railways in freight transport, which has historically lost ground to road transport. These corridors achieve this by providing exclusive tracks for cargo, thereby separating freight from passenger traffic. This separation ensures faster transit times and higher reliability for goods, making rail a more competitive choice for industrial and commercial logistics.

39. (A) Hubballi Division - Karnataka
The Hubballi Division is an important administrative unit of the South Western Railway and is located in the state of Karnataka. Other pairings like Chennai Division with Kerala or Danapur with Rajasthan are incorrect, as Chennai is in Tamil Nadu and Danapur is in Bihar. Similarly, the Waltair Division is associated with Andhra Pradesh rather than the state of Gujarat.

40. (D) Planning focuses on high-capacity, sustainable mass transit systems over private vehicles.
The rapid expansion of Metro rail in major Indian cities indicates that urban planning is shifting towards high-capacity, sustainable mass transit systems. This strategy aims to provide an efficient alternative to private vehicles, thereby reducing congestion and environmental pollution. It does not imply that buses are obsolete or that planning is moving away from city development; rather, it emphasizes integrated urban mobility.

41. (C) Directorate General of Civil Aviation (DGCA)
The Directorate General of Civil Aviation is the primary regulatory body for civil aviation in India. It is responsible for overseeing safety standards, licensing pilots and engineers, and ensuring compliance with international aviation regulations. While the Airports Authority of India manages infrastructure and the Bureau of Civil Aviation Security handles security, the DGCA focuses on the technical and safety aspects.

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42. (A) I and II
The UDAN scheme was launched to stimulate regional air connectivity and make flying affordable for the general public. It achieves this by capping fares for a percentage of seats and providing subsidies to airlines. The scheme focuses on reviving under-served and unserved regional airports rather than strictly focusing on international airports, making the third statement incorrect while the others are valid.

43. (A) Airports Authority of India (AAI)
The Airports Authority of India is the statutory body responsible for the creation, upgrade, maintenance, and management of civil aviation infrastructure across the country. It manages a large number of airports, including international, domestic, and customs airports. Its mandate

includes providing air traffic management services and ensuring the safe and efficient operation of aircraft within the Indian airspace and at airports.

44. (A) P-IV, Q-I, R-II, S-III
Major international airports in India are named after prominent figures and are located in key cities. Indira Gandhi International Airport serves Delhi, while Chhatrapati Shivaji Maharaj International Airport is in Mumbai. Netaji Subhas Chandra Bose International Airport is located in Kolkata, and Kempegowda International Airport serves Bengaluru. These airports act as major hubs for both domestic and international passenger and cargo traffic.

45. (A) Both A and R are true and R is the correct explanation of A.
Viability Gap Funding is a critical component of the UDAN scheme because it provides financial support to airlines operating on regional routes. Many of these routes may not be immediately profitable due to low initial demand. Therefore, airlines are often reluctant to fly these paths unless they receive government compensation for potential operational losses, ensuring that regional connectivity remains sustainable.

46. (A) I, II, III, IV
Delhi's Indira Gandhi International Airport consistently handles the highest volume of passenger traffic in India, followed by Mumbai's airport. Bengaluru has seen significant growth, ranking third, with Chennai following as the fourth busiest. This sequence reflects the relative economic activity and connectivity needs of these major metropolitan hubs, which serve as the primary gateways for air travel in the country.

47. (A) It is indispensable for the rapid export of high-value and perishable goods.
Air cargo plays a vital role in global logistics, particularly for the rapid transport of high-value items like electronics and pharmaceuticals, as well as perishable goods like flowers and fresh produce. While it is not the most economical for bulk ores and represents a smaller volume than road or rail, its speed and reliability make it essential for time-sensitive trade.

48. (C) NW-1 - Ganga-Bhagirathi-Hooghly River System
National Waterway 1 is the longest waterway in India, spanning the Ganga-Bhagirathi-Hooghly river system from Prayagraj to Haldia. NW-2 is associated with the Brahmaputra River, and NW-3 consists of the West Coast Canal in Kerala. These waterways are designated to promote inland water transport, which is a fuel-efficient and cost-effective alternative for moving bulk cargo across different regions.

49. (A) I, II and III
The Sagarmala project is a flagship initiative focusing on port modernization, new port development, and promoting port-led industrialization. It also aims to enhance coastal shipping and inland water transport. While it may receive some international funding, it is not completely funded by the World Bank with no domestic capital, as the Indian government and private sectors provide substantial investment for its implementation.

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50. (C) Minor ports are entirely owned and operated by the Inland Waterways Authority of India.
Major ports in India are administered by the Central Government, while minor and intermediate ports fall under the jurisdiction of the respective State Governments. The Inland Waterways Authority of India focuses on rivers and canals rather than seaports. Other statements, such as JNPT being the largest container port and Kandla being a tidal port, are factually correct regarding India's maritime infrastructure.

51. (A) Developing industrial clusters near ports to lower costs and boost competitiveness.
Port-led development is a strategic concept that involves establishing industrial clusters and manufacturing hubs in close proximity to major ports. By doing so, businesses can significantly reduce logistics costs and improve their global competitiveness through easier access to international shipping routes. This approach aims to transform coastal regions into economic drivers by integrating maritime transport with industrial production and efficient supply chains.

52. (A) I, II, III and V
Inland water transport is recognized as the cheapest and most fuel-efficient mode for

Chennai Beach to Velachery. Most of its route is elevated on concrete pillars rather than being underground. It is operated by the Southern Railway and serves as a critical commuter link for people living along the city's eastern coast. Therefore, the statement claiming it is entirely underground is incorrect.

88. (C) NH 44 - Connects Hosur to Kanyakumari traversing north-south
National Highway 44 is a major north-south corridor that enters Tamil Nadu at Hosur and runs all the way to Kanyakumari, passing through cities like Salem and Madurai. Other highways are differently routed: NH 48 connects Chennai to Bengaluru, while NH 32 is a coastal highway. NH 83 connects Coimbatore to Nagapattinam, passing through Trichy, rather than connecting Trichy to Chennai.

89. (A) I, II and III
The Southern Railway zone, headquartered in Chennai, was formed in 1951, making it one of the earliest zones in independent India. It covers Tamil Nadu, Kerala, Puducherry, and parts of Andhra Pradesh. The network is predominantly broad-gauge today, as historical narrow and metre-gauge lines have been converted. Therefore, the statement that it solely operates narrow gauge lines is incorrect.

90. (C) Erode, Trichy, and Madurai facilitate train reversals and branch line diversions.
Erode, Tiruchirappalli (Trichy), and Madurai are crucial railway junctions in Tamil Nadu where multiple rail lines converge. These junctions are essential for operational flexibility, allowing for train reversals and branch line diversions to various parts of the state and beyond. Kanyakumari is a terminal station rather than a central junction, and Ooty is famous for its narrow-gauge heritage mountain railway line.

91. (D) To allow heavy vehicles to access the port without entering Chennai city limits.
The Chennai Peripheral Ring Road is a major infrastructure project designed to improve regional logistics and decongest the city. Its primary goal is to provide a dedicated route for heavy vehicles and freight traffic to reach the Ennore and Kattupalli ports from industrial clusters without entering core city limits. This bypass helps reduce urban traffic congestion and improves the efficiency of goods movement.

92. (A) I, II, III and IV
Chennai's active mass transit ecosystem is characterized by a multi-modal network including the extensive MTC bus system, suburban EMU trains, the elevated MRTS, and the expanding Metro Rail. These systems work together to provide comprehensive coverage across the metropolitan area. However, there is no extensive inland water ferry system dominating commuter traffic in Chennai, as water transport is not a major component.

93. (A) State Highways connect cities, while District Roads connect local production areas.
In the administrative hierarchy of Tamil Nadu's roads, State Highways are primarily designed to connect major cities, district headquarters, and National Highways. In contrast, District Roads are intended to link local production centers, agricultural markets, and smaller towns with the larger state highway network. Both are typically paved and maintained by the state government, though their functional scope and traffic volumes differ significantly.

94. (A) P-II, Q-IV, R-III, S-I
The Nilgiri Mountain Railway is a UNESCO World Heritage site known for its heritage steam engines and rack-and-pinion system. The Vande Bharat Express between Chennai and Mysuru is an indigenous semi-high-speed train. The Integral Coach Factory (ICF) in Chennai is a premier unit for manufacturing passenger coaches. Royapuram station holds historical significance as the oldest surviving railway station structure in India.

95. (II, I, III) Answer not known
Chennai was the first city in Tamil Nadu to implement and operate a modern Metro Rail system, with Phase 1 launched in 2015. Coimbatore followed with advanced planning and proposals for a metro system to address its growing traffic needs. Madurai is the most recent among the three to have formal proposals and feasibility studies commissioned for a modern mass transit system.

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61. (A) Hazira-Vijaipur-Jagdishpur (HVJ) pipeline
The Hazira-Vijaipur-Jagdishpur (HVJ) pipeline was the first major cross-country natural gas pipeline established in India. It was designed to transport natural gas from the western coast to various industrial hubs and fertilizer plants in the northern and central parts of the country. This pipeline played a foundational role in developing India's gas grid and supporting the energy needs.

62. (A) I and III
Pipelines are exceptionally well-suited for the bulk transport of liquids like crude oil and petroleum products, as well as natural gas. They are versatile and can be laid across challenging terrains, including mountains and underwater. Importantly, once the system is operational, it does not require continuous human intervention for the daily movement of goods, making the second statement incorrect while others remain valid.

63. (A) The Indian postal network is the largest in the world.
India Post operates the largest postal network in the world, with over 1.5 lakh post offices reaching even the most remote rural areas. Beyond traditional mail, it offers a wide range of financial services, including savings accounts and insurance. Speed Post is a popular time-bound service available across the country, and the Postal Index Number code actually consists of six digits.

64. (A) P-III, Q-II, R-I, S-IV
India Post is the world's largest postal network, providing essential mail and financial services. BSNL is a prominent state-owned enterprise in the telecommunications sector. The Telecom Regulatory Authority of India (TRAI) is responsible for regulating tariffs and policies within the industry. Meanwhile, the DGCA is the regulatory body for civil aviation, ensuring safety and standards in the Indian airspace and airports.

65. (C) A is true but R is false.
The Digital India programme is a flagship initiative intended to transform the country into a digitally empowered society and a knowledge-based economy. It focuses on broad goals like digital infrastructure, e-governance, and digital literacy. However, the claim that it focuses solely on providing free mobile devices to citizens below the poverty line is false, as its scope is much wider.

66. (A) I, II, III, IV
The evolution of communication in India began with the telegraph, which was the primary mode of long-distance messaging for over a century. This was followed by the widespread use of analog fixed-line telephones. The mobile era began with 2G networks, offering basic voice and text services, and has now advanced to high-speed 4G and 5G mobile broadband, providing sophisticated data connectivity.

67. (B) It aims to provide high-speed broadband connectivity to all Gram Panchayats in India.
The BharatNet project is a massive initiative aimed at providing high-speed broadband connectivity to all Gram Panchayats in India. It primarily utilizes an extensive network of optical fibre cables to ensure high-capacity data transmission. While satellites might be used for extremely remote areas, the backbone of the project is fibre optic technology, funded by the Universal Service Obligation Fund to support rural e-governance.

68. (D) BSNL - Private sector telecommunication monopoly
BSNL (Bharat Sanchar Nigam Limited) is a public sector enterprise owned by the Government of India, rather than a private sector monopoly. Other pairs are correctly matched: Speed Post is a time-bound express service, India Post Payments Bank provides accessible banking and direct benefit transfers, and the PIN code system is used to identify specific geographic jurisdictions for efficient mail delivery.

69. (A) I, II and III
The Digital India programme is built on three core vision areas: providing digital infrastructure as a utility to every citizen, ensuring governance and services are available on demand, and achieving the digital empowerment of all citizens. The idea of mandatory replacement of all physical transport with virtual reality is not a vision area of the programme, as it focuses on enhancing connectivity.

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121. (B) It is consistently higher than the national average, reflecting strong digital penetration.
Tamil Nadu consistently maintains a telecom density that is significantly higher than the national average in India. This reflects the state's high level of urbanization, strong economic performance, and proactive adoption of digital technologies. High teledensity indicates that a larger percentage of the population has access to mobile and landline connections, fostering better communication and growth in the digital services sector.

122. (A) I and II
The Chennai-Bengaluru Expressway is a flagship project under the Bharatmala Pariyojana, designed as an access-controlled highway to significantly reduce travel time between the two major economic hubs. While it connects Tamil Nadu and Karnataka, the route also passes through a section of Andhra Pradesh to ensure a direct path. Therefore, the statement that it completely bypasses Andhra Pradesh is factually incorrect, while others are accurate.

123. (D) The state has high internet subscription rates, bolstered by the BharatNet initiative.
Tamil Nadu has one of the highest internet penetration rates in India, with high subscription numbers across both urban and rural areas. This digital growth is further supported by the state-led implementation of the BharatNet initiative, which aims to provide high-speed connectivity to all village panchayats. Contrary to other options, connectivity is widespread, and the government is actively expanding the optical fibre infrastructure for all.

124. (A) P-II, Q-IV, R-III, S-I
The Chennai Peripheral Ring Road is designed to decongest the city by diverting bypass traffic. The Chennai-Bengaluru Expressway aims to reduce travel time and boost industrial growth. The Chennai Port-Maduravoyal Expressway provides a dedicated elevated corridor for port-bound freight. Meanwhile, BharatNet Tamil Nadu (TANFINET) focuses on connecting all village panchayats with high-speed optical fibre to provide digital services to rural populations.

125. (A) Both A and R are true and R is the correct explanation of A.
The implementation of the BharatNet project through the TANFINET corporation is a strategic move to bridge the digital divide between rural and urban Tamil Nadu. By providing high-speed broadband to remote Gram Panchayats, the project creates the necessary infrastructure for delivering vital e-governance services, telemedicine, and digital education. This ensures that rural citizens have equal access to opportunities, directly supporting the assertion provided.

126. (A) I, II, III
The introduction of mass transit in Chennai began with the suburban EMU train services, which have been operational for several decades. This was followed by the Mass Rapid Transit System (MRTS) in the late 1990s and early 2000s. The most recent addition is the modern Chennai Metro Rail, which launched its first phase in 2015. This sequence reflects the city's long history of developing rail-based transit options.

127. (A) The state government does not utilize any e-governance portals for citizen services.
The statement that the Tamil Nadu government does not use e-governance portals is incorrect, as the state is a leader in digital governance with numerous portals like TN e-Sevai. Tamil Nadu actually has multiple international submarine cable landing stations in Chennai and a robust state-wide area network. Optic fibre expansion remains a top priority to support the state's large and growing IT and digital service sectors.

128. (C) Chalo App - Live tracking and ticketing for Chennai MTC buses
The Chalo App is a modern digital tool used in Chennai for the live tracking of MTC buses and for purchasing mobile tickets, which enhances the commuter experience. Other apps serve different purposes: the Uzhavan App is designed for farmers' needs, and TN e-Sevai is for accessing various government certificates and services online, rather than booking flight tickets. These apps are part of the state's digital initiatives.

129. (A) I, II and IV
The Chennai Peripheral Ring Road is expected to significantly improve connectivity between

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a result, individual consumers increasingly prefer mobile telephony over traditional landlines, making the reason a valid explanation.

79. (A) India Post Payments Bank - Government-owned company providing accessible banking.
India Post Payments Bank is a government-owned entity that leverages the vast postal network to provide accessible banking and financial services, including direct benefit transfers. In contrast, the USOF is for rural telecom connectivity, not military programs. TRAI is a regulatory body, not a hardware manufacturer, and VSNL is no longer a state-owned monopoly as it was privatized and became Tata Communications.

80. (C) Physical transport needs for accessing basic administrative services will substantially decrease.
The transition of government services to digital platforms under the e-Kranti initiative means that citizens can access various administrative and public services online. This digital shift logically reduces the need for people to travel physically to government offices, thereby decreasing the overall demand for physical transport for routine administrative tasks. This enhances efficiency and saves time and resources for the public.

81. (D) Tamil Nadu Road Development Company (TNRDC)
The Tamil Nadu Road Development Company was specifically formed as a joint venture to implement and manage major road infrastructure projects in the state. One of its most prominent projects is the Rajiv Gandhi Salai, also known as the Old Mahabalipuram Road or the IT Expressway. The TNRDC is responsible for the maintenance and toll operations of this crucial corridor.

82. (A) I and II
State Highways in Tamil Nadu serve as vital links between district headquarters, important towns, and National Highways. They are primarily constructed and maintained by the Tamil Nadu State Highways Department. However, the claim that Tamil Nadu has the lowest density of State Highways is incorrect; in fact, the state is known for having a relatively high and well-maintained road density.

83. (A) It is a major state-owned bus operator connecting inter-city and rural routes.
The Tamil Nadu State Transport Corporation is a prominent government-owned entity that operates a massive fleet of buses across the state. It provides essential connectivity between various cities and reaches deep into rural areas, ensuring affordable transport for the public. While it is modernizing, it has not yet completely replaced its entire fleet with electric buses, and it remains public.

84. (A) P-II, Q-I, R-IV, S-III
In Tamil Nadu, the Metropolitan Transport Corporation (MTC) manages the urban bus network within Chennai. The State Express Transport Corporation (SETC) operates long-distance, inter-state, and intra-state express bus services. The Tamil Nadu State Transport Corporation (TNSTC) handles inter-city and district-level services. Meanwhile, Chennai Metro Rail Limited (CMRL) is responsible for the planning and operation of the city's modern metro rail system.

85. (A) Both A and R are true and R is the correct explanation of A.
Chennai Central and Chennai Egmore are the two primary railway hubs in the city, each serving distinct geographic regions. Chennai Central is the main terminus for trains heading towards the North and West of India. On the other hand, Chennai Egmore serves as the major gateway for intra-state trains traveling to the southern districts. This functional division helps manage heavy rail traffic.

86. (A) I and II
Phase 1 of the Chennai Metro Rail project consists of two major operational corridors that intersect at the Chennai Central and Alandur stations. The Blue Line connects Wimco Nagar in the north to the Chennai International Airport in the south. The Green Line runs from Chennai Central to St. Thomas Mount. Together, these lines provide a modern, high-speed transit alternative for commuters.

87. (B) It is entirely underground, similar to standard metro rail systems.
The Mass Rapid Transit System (MRTS) in Chennai is a suburban railway line that connects

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70. (D) Public sector entities like BSNL and private sector firms like Jio or Airtel.
The telecommunications sector in India is broadly classified into two categories based on ownership: public sector and private sector operators. BSNL and MTNL are the major government-owned entities, while firms like Reliance Jio, Bharti Airtel, and Vodafone Idea represent the private sector. This competitive landscape has driven innovation, expanded network coverage, and made mobile services more affordable for the general population.

71. (A) Utilizing light signals to transmit large amounts of data quickly over long distances.
Optical fibre technology is based on the principle of transmitting data as pulses of light through thin strands of glass or plastic. This method allows for significantly higher bandwidth and faster data transmission speeds over long distances compared to traditional copper wires. It forms the backbone of modern high-speed internet networks, enabling the efficient delivery of digital services and large-scale communication.

72. (A) I, II, III, IV, V
The milestones in India's communication history began with the PIN code system in 1972, followed by the launch of Speed Post in 1986. The Telecom Regulatory Authority of India (TRAI) was established in 1997 to regulate the sector. More recently, the Digital India campaign was launched in 2015, and the rollout of commercial 5G services began in 2022, representing the latest technological advancement.

73. (D) The number of telephone connections for every hundred individuals living within an area.
Teledensity is a standard metric used to measure the penetration of telecommunication services within a specific area or population. It is calculated as the number of telephone connections, including both landline and mobile, for every hundred individuals. High teledensity often indicates better digital connectivity and easier access to communication services, reflecting the level of technological advancement and infrastructure development in a region.

74. (A) P-II, Q-I, R-IV, S-III
The Digital India programme is supported by several pillars: Broadband Highways focus on high-speed internet connectivity, while e-Kranti aims for the electronic delivery of services like health and education. Universal Access to Mobile Connectivity ensures network availability in all villages. e-Governance involves reforming government processes through technology to improve efficiency and transparency for citizens across the whole country.

75. (A) I, IV, II, III
Maharashtra consistently holds the largest internet subscriber base in India due to its large population and highly developed urban centers like Mumbai and Pune. It is followed by Tamil Nadu and Andhra Pradesh, which also show high digital penetration. Sikkim, being a small Himalayan state with a much lower population, naturally has a significantly smaller total number of internet subscribers in comparison.

76. (A) Establishing sovereign internet protocols isolated from the global web.
The BharatNet project is designed to bridge the digital divide by connecting Gram Panchayats with high-speed broadband, thereby facilitating rural e-governance and e-health. It aims to integrate rural populations into the existing digital economy. However, establishing sovereign internet protocols isolated from the global web is not an objective, as the project intends to provide standard internet access to improve connectivity.

77. (A) OFCs provide higher bandwidth and are immune to electromagnetic interference.
Optical fibre cables offer a major advantage over traditional copper cables because they can carry much larger amounts of data over longer distances with minimal signal loss. Additionally, since they transmit light rather than electrical signals, they are completely immune to electromagnetic interference. This makes them more reliable for high-speed internet and communication services, especially in areas with high electrical activity.

78. (A) Both A and R are true and R is the correct explanation of A.
In the last decade, there has been a significant and continuous decline in the number of landline telephone connections across India. This trend is driven by the rapid proliferation of affordable mobile phones and wireless broadband services, which offer greater convenience and mobility. As

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96. (C) To completely replace and dismantle the existing MTC bus fleet.
The expansion of the Chennai Metro Rail into Phase 2 aims to improve connectivity to IT corridors, reduce carbon emissions, and provide seamless multi-modal integration. However, the objective is to create a complementary transport network rather than to completely replace and dismantle the existing MTC bus fleet. Buses will continue to play a vital role in providing last-mile connectivity and serving other routes.

97. (D) They have zero tailpipe emissions and lower running costs compared to diesel buses.
Inducting electric buses into the MTC fleet offers significant environmental and economic benefits. These vehicles produce zero tailpipe emissions, which helps improve air quality in the city. Additionally, they generally have lower operational and running costs compared to traditional diesel buses due to cheaper electricity and reduced maintenance needs. Their contribution to a cleaner urban environment makes them a strategic choice for transport.

98. (A) Both A and R are true and R is the correct explanation of A.
The Tamil Nadu State Transport Corporation is pivotal for inclusive growth because it provides an extensive and affordable network of bus services. By connecting remote and underserved villages to urban centers, it enables rural populations to access essential services like higher education, specialized healthcare, and diverse employment opportunities. This mobility is a key driver for social development, validating the reason provided.

99. (B) Chennai Port-Maduravoyal Expressway - An underground metro tunnel exclusively for passengers
The Chennai Port-Maduravoyal Expressway is actually a planned double-decker elevated expressway intended to provide dedicated freight access between the port and the highway network, rather than an underground metro tunnel. Other projects like the East Coast Road, the Outer Ring Road (Vandalur to Minjur), and the Pamban railway bridge are correctly identified with their respective characteristics and essential functions.

100. (D) Efforts focus on building a multi-modal network to ensure seamless commuter mobility.
The integration of the MRTS, Metro Rail, and Suburban rail systems in Chennai reflects an urban transport policy that prioritizes a seamless, multi-modal network. By coordinating these different rail systems and linking them with bus termini, the city aims to provide a more efficient and user-friendly experience for commuters. This strategy focuses on maximizing the utility of existing infrastructure while expanding high-capacity options.

101. (C) Four
Tamil Nadu is unique in India for having four operational international airports located in Chennai, Coimbatore, Tiruchirappalli (Trichy), and Madurai. These airports serve as major gateways for both domestic and international travel, supporting the state's industrial and tourism sectors. The presence of multiple international airports across different regions facilitates balanced growth and provides connectivity to Southeast Asia, the Middle East, and beyond.

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102. (A) I and II
Chennai International Airport is a major hub and ranks as the fourth busiest airport in India in terms of passenger traffic. It also serves as the southern regional headquarters for the Airports Authority of India. The claim that it handles only domestic flights is incorrect, as it is a major international gateway with numerous flights connecting Chennai to global destinations. Therefore, only the first two statements are accurate.

103. (A) It is the first corporate port in India, registered as a public company.
Kamarajar Port, formerly known as Ennore Port, is distinguished as the first major port in India to be registered as a corporate entity under the Companies Act. This structure gives it greater financial and administrative autonomy compared to other major ports managed by trusts. It was primarily developed to handle bulk cargo like coal for power plants and has since expanded to handle containers.

104. (A) P-IV, Q-III, R-II, S-I
Chennai Airport is the primary gateway to South India and a major cargo hub. Coimbatore Airport serves the western industrial hub. Madurai Airport is the gateway to southern districts and major pilgrimage tourism. Tiruchirappalli (Trichy) Airport is significant for its high volume of international passenger traffic, especially from Southeast Asia, serving the needs of the central region and its large NRI population.

105. (A) Both A and R are true and R is the correct explanation of A.
The V.O. Chidambaranar Port in Thoothukudi is critical for the industrial development of southern Tamil Nadu. It plays a vital role in the state's energy security because it handles large volumes of imported coal, which is essential for fueling the numerous thermal power plants located in and around the southern districts. This direct link between the port's cargo handling and power generation validates the reason provided.

106. (B) II, I, III
In a north-to-south sequence along the Tamil Nadu coast, the Kamarajar Port (Ennore) is the northernmost major port. It is followed by the Chennai Port, located slightly further south. The southernmost major port in the state is the V.O. Chidambaranar Port in Thoothukudi. Understanding this geographical layout is important for analyzing the logistics and trade flows along the state's extensive coastline on the Bay of Bengal.

107. (B) It is the deepest naturally formed port in India, surpassing Vishakhapatnam.
Nagapattinam is classified as a minor port and is known for handling edible oils and facilitating ferry services to Sri Lanka. However, it is not the deepest naturally formed port in India; that distinction belongs to Vishakhapatnam on the Andhra Pradesh coast. While Nagapattinam has historical and regional importance for trade and passenger movement, its draft is smaller compared to major deep-water ports.

108. (A) Chennai Port - Artificial, all-weather port with a dedicated car export terminal.
Chennai Port is an artificial, all-weather port that has evolved into a major hub, featuring a dedicated terminal for exporting automobiles manufactured in the region. Other pairings are incorrect: Kamarajar Port handles various industrial goods, not just agricultural exports. Kattupalli is a private port with major container facilities, and Colachel is a proposed transshipment port, rather than a natural gas extraction platform.

109. (A) I, II and III
Chennai's status as a major logistics hub is supported by the presence of three major ports (Chennai, Ennore, and Kattupalli) and a large international airport with extensive cargo facilities. Additionally, it is well-connected through the Golden Quadrilateral road network and major rail yards. The claim that it relies completely on inland river transport is incorrect, as rivers in the region are not used for significant distribution.

110. (C) Major ports (Central Government) and Minor/Intermediate ports (TN Maritime Board).
Ports in Tamil Nadu are classified into two administrative categories: Major ports and Minor or Intermediate ports. Major ports, such as Chennai and Kamarajar, are under the jurisdiction of the Central Government. Minor and intermediate ports, which include locations like Nagapattinam, are managed by the Tamil Nadu Maritime Board. This dual system helps organize maritime trade and infrastructure development at both levels.

111. (A) It provides cleaner energy, supporting the transition to a gas-based economy.
The establishment of an LNG terminal at Kamarajar Port is a strategic step towards enhancing energy security and promoting environmental sustainability. It provides a cleaner alternative to coal and oil, supporting the state's transition to a more gas-based economy. The gas imported here is used for power generation and industrial applications, helping reduce the carbon footprint of the state's energy sector.

112. (A) II, III, IV and V
The Buckingham Canal is an artificial, saltwater navigation canal running parallel to the Coromandel Coast, connecting Kakinada to Villupuram. Historically, it was a vital artery for transporting goods like firewood and salt. However, urban encroachment and pollution

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have diminished its navigational utility in modern times. The claim that it is a naturally formed river is incorrect, while all other historical and geographical points are accurate.

113. (D) A public limited company port with greater administrative and financial autonomy.
A "Corporate Port," like Kamarajar Port in Ennore, refers to a major port that is organized as a public limited company under the Companies Act, rather than being managed by a traditional port trust. This corporate structure provides the port with greater administrative flexibility and financial autonomy to make quick decisions and raise capital, distinguishing it from other government-managed major ports in India.

114. (A) P-I, Q-II, R-III, S-IV
A major Multi-Modal Logistics Park is being developed at Mappedu near Chennai to improve freight efficiency. Tiruchirappalli serves as a key node in the Tamil Nadu Defence Industrial Corridor. Chennai Port is a premier hub for auto-exports from South India. Rajiv Gandhi Salai, famously known as the OMR, is the state's major IT and ITES corridor, housing numerous technology companies and research institutions.

115. (A) I, II, III
Among the major ports in Tamil Nadu, Chennai Port historically possesses the largest total cargo handling capacity, reflecting its role as a long-standing multi-purpose hub. It is followed by the Kamarajar Port in Ennore, which has rapidly expanded its capacity for bulk and container cargo. The V.O. Chidambaranar Port in Thoothukudi ranks third, serving as the primary maritime gateway for the state's southern region.

116. (D) It was constructed during the post-independence era in the 1960s.
Chennai Port is one of India's oldest modern ports, with its development dating back to the late nineteenth century during the British colonial period. While it is a major container and auto-export hub and faces urban congestion issues, it was not originally constructed in the post-independence 1960s. Instead, it has undergone continuous modernization since its founding to meet the growing demands of trade.

117. (A) They lower costs and time by facilitating freight transfer between road, rail, and sea.
Multi-Modal Logistics Parks are designed to streamline the movement of goods by integrating different modes of transport like road, rail, and sea at a single location. This integration significantly lowers logistics costs and transit times by providing efficient cargo handling and warehousing services. By improving supply chain speed and reliability, these parks enhance the economic competitiveness of Tamil Nadu's manufacturing and export sectors.

118. (A) Both A and R are true and R is the correct explanation of A.
The potential for inland water transport in Tamil Nadu remains largely underutilized. This is primarily because most rivers in the state are non-perennial and depend heavily on seasonal monsoon rains for their flow. As a result, maintaining the consistent water depth required for year-round navigation is extremely difficult. This natural constraint makes water transport less reliable compared to other modes like road and rail.

119. (A) Tiruchirappalli Airport - Tambaram
Tiruchirappalli (Trichy) Airport is located in the city of Tiruchirappalli, while Tambaram is a suburb of Chennai known for its Air Force station and railway hub. Other pairs are correctly matched with their specific local areas: Chennai Airport is in Meenambakkam, Madurai Airport is in Avaniyapuram, and Coimbatore Airport is located in Peelamedu. These locations are the actual sites of the respective civil airports.

120. (D) Industries are shifting to northern Chennai to leverage port-led logistics.
The expansion of major ports like Kamarajar and Kattupalli in northern Chennai is a strong indicator of port-led industrialization. This development encourages industries, particularly in manufacturing and logistics, to relocate or set up new facilities in the northern parts of the city to take advantage of superior maritime connectivity and reduced transport distances. This trend highlights the synergy between infrastructure growth and regional industrial shifts.

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bulk cargo, offering significant environmental benefits. It requires low maintenance compared to roads, though initial capital for developing fairways can be high. However, it faces challenges from seasonal water level changes and cannot connect landlocked states seamlessly without road intervention, as last-mile connectivity usually requires other modes.

53. (A) A statutory body developing and regulating inland waterways for shipping and navigation.
The Inland Waterways Authority of India is a statutory body established to develop, maintain, and regulate inland waterways for the purpose of shipping and navigation. Its primary mandate involves creating infrastructure like terminals and ensuring a minimum depth for vessels on designated National Waterways. It does not manage private ferry services in cities or oversee major seaports, which are handled separately.

54. (A) P-IV, Q-I, R-II, S-III
Mumbai Port is the largest natural port in India, providing a spacious and well-sheltered harbor. Vishakhapatnam is known as the deepest landlocked and protected port on the east coast. Kolkata is a significant riverine port located on the Hooghly River, while Chennai is the oldest artificial port on the eastern seaboard. These characteristics define their operational roles and historical importance in trade.

55. (A) III, I, II, IV
Travelling from north to south along India's eastern coast, one first encounters the Kolkata (Haldia) port system in West Bengal. Moving south, the next major port is Paradip in Odisha, followed by Vishakhapatnam in Andhra Pradesh. Finally, Chennai port is located further south in Tamil Nadu. This geographical sequence is important for understanding the distribution of maritime infrastructure and trade hubs.

56. (C) Mundra
Major ports in India, such as Mormugao, Kamarajar (Ennore), and New Mangalore, are under the administrative control of the Central Government. Mundra Port, although it is one of the largest and most active ports in the country in terms of cargo volume, is a private port located in Gujarat and is not classified as one of the government-controlled major ports.

57. (D) It reduces carbon emissions and eliminates transit losses or operational delays.
Pipeline transport offers a highly efficient and environmentally friendly way to move liquids and gases. Once installed, it operates continuously with minimal energy consumption, significantly reducing carbon emissions compared to trucks or trains. Furthermore, pipelines are secure systems that eliminate transit losses due to evaporation or theft and are not subject to delays caused by traffic or weather, ensuring steady supply.

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58. (A) Both A and R are true and R is the correct explanation of A.
Despite India's extensive coastline, coastal shipping represents a small fraction of domestic freight movement. This is primarily due to several structural and financial hurdles, including high charges at ports and a lack of efficient first and last-mile connectivity to the hinterland. Inadequate depth or draft at many ports also prevents larger vessels from operating efficiently, validating the reasons behind the sector's performance.

59. (D) Hazira-Vijaipur-Jagdishpur (HVJ) Pipeline - GAIL (India) Limited
The Hazira-Vijaipur-Jagdishpur (HVJ) pipeline is India's first cross-country gas pipeline and is operated by GAIL (India) Limited. Other pipelines like Salaya-Mathura are operated by Indian Oil Corporation rather than ONGC, and the Naharkatia-Nunmati-Barauni network is managed by Oil India Limited. These pipelines are critical for transporting energy resources from production sites and ports to refineries and industrial consumers.

60. (A) Logistics costs are expected to decrease by optimizing modal mix and reducing inland transport distances.
A primary objective of the Sagarmala programme is to significantly reduce overall logistics costs in India. This is expected to be achieved by optimizing the modal mix, which involves shifting more freight from roads to cheaper coastal and inland water transport. By reducing the distance of inland transport and improving port efficiency, the programme aims to make Indian exports more competitive.

the Ennore port and industrial clusters like Sriperumbudur, while also reducing heavy truck traffic within the core city. This will lead to a major enhancement in regional logistical efficiency. However, it will not cause a complete cessation of rail freight traffic, as rail and road transport typically complement each other in a multi-modal system.

130. (C) Implementation of NMT infrastructure like pedestrian plazas and cycling tracks.
Under the Smart City Mission, sustainable urban mobility focuses on reducing carbon emissions and promoting eco-friendly transit options. The implementation of Non-Motorized Transport (NMT) infrastructure, such as pedestrian plazas and dedicated cycling tracks, is a key part of this strategy. These initiatives aim to make cities more walkable and bike-friendly, encouraging people to move away from private car usage and towards sustainable movement.

131. (A) Leveraging East Coast connectivity to establish manufacturing and industrial clusters.
The Chennai-Kanyakumari Industrial Corridor (CKIC) is a strategic project aimed at leveraging the state's extensive east coast connectivity to foster industrial growth. The concept involves developing multiple industrial and manufacturing clusters along the corridor, which will benefit from proximity to ports and major highways. This integrated approach is designed to attract investment and boost the overall economic development of the districts lying along the southern seaboard.

132. (A) I, II, III and V
Achieving an integrated transport system in Chennai involves several key steps, such as adopting a Common Mobility Card, physically linking different transit stations, and coordinating timetables for better connectivity. Establishing a Unified Metropolitan Transport Authority (CUMTA) is also essential for synchronized planning. However, the elimination of pedestrian pathways is contrary to the goals of a modern integrated system, which should prioritize safe and accessible commuter movement.

133. (A) A government grant for projects that are justified but lack financial viability.
In the context of infrastructure in Tamil Nadu, Viability Gap Funding is a one-time grant provided by the government to support projects that are socially and economically essential but not immediately profitable for private investors. This financial mechanism helps bridge the gap between a project's cost and its expected revenue, making it more attractive for public-private partnerships. This ensures that critical infrastructure can be successfully implemented.

134. (A) P-III, Q-I, R-IV, S-II
Sriperumbudur and Oragadam are world-renowned hubs for automobile and electronics manufacturing. Tiruppur is India's premier cluster for knitwear and textile exports. Thoothukudi is known for its port-based thermal power and chemical industries. Hosur, located near the Karnataka border, has developed into a major center for heavy engineering and electronics manufacturing, benefiting from its strategic location and favorable industrial climate for large-scale production.

135. (A) I, II, III, IV
Moving from north to south through the heart of Tamil Nadu along the major arterial highways, the sequence begins with the section from Chennai to Tindivanam. This is followed by the stretch from Tindivanam to Tiruchirappalli (Trichy), and then from Tiruchirappalli to Madurai. The final major section in this north-south traversal is from Madurai to Kanyakumari. This route forms a critical lifeline for the state's trade and commerce.

136. (C) Inland Waterways Authority of India (IWAI) hubs
Communication infrastructure in Tamil Nadu includes submarine optical fibre cable landing stations, the State Wide Area Network (TNSWAN), and the State Data Centre (TNSDC). These components are essential for data transmission, hosting government services, and ensuring high-speed internet connectivity. The Inland Waterways Authority of India (IWAI) hubs are related to water transport and navigation rather than being a part of the state's digital and telecommunications network.

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23. Consider the following statements concerning demographic trends in Tamil Nadu:
I. Tamil Nadu is currently experiencing a shrinking demographic dividend due to an ageing population.
II. The Total Fertility Rate (TFR) in Tamil Nadu has fallen below the replacement level.
III. Tamil Nadu has the highest proportion of young population (0-14 years) in India.
IV. The dependency ratio in Tamil Nadu is expected to rise in the coming decades.
Which of the statements given above are correct?
(A) I, II and IV
(B) I, III and IV
(C) I and IV
(D) II and III
(E) Answer not known

24. Which constitutional provision establishes a Special Officer for Linguistic Minorities to safeguard their interests?
(A) Article 350B
(B) Article 343
(C) Article 29
(D) Article 120
(E) Answer not known

25. Consider the following statements about the stages of demographic transition:
I. The first stage is characterised by high birth rates and high death rates.
II. Population growth is most rapid during the second stage due to a sharp decline in death rates.
III. The third stage exhibits a declining birth rate and a low death rate.
IV. India is currently in the first stage of the demographic transition model.
V. The final stage is marked by a stagnant or declining population with low birth and death rates.
Which of the statements given above are correct?
(A) I, II, III and V
(B) I, III, IV and V
(C) I, II and V
(D) III, IV and V
(E) Answer not known

26. Select the correct answer from the options given below based on the following Assertion (A) and Reason (R):
Assertion (A): Internal migration in India has historically been dominated by rural-to-rural movement.
Reason (R): Female migration due to marriage constitutes the largest portion of rural-to-rural migration in India.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

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27. Select the correct answer from the options given below based on the following Assertion (A) and Reason (R):
Assertion (A): The Badagas are considered the largest indigenous social group in the Nilgiris district.
Reason (R): The Badagas were the first tribal group in India to be granted UNESCO heritage status for their dialect.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

28. Match the following tribes recognized as PVTGs with their state of maximum concentration:
List I: (Tribes)
P. Jarawa
Q. Sahariya
R. Bonda
S. Cholanaikkan
List II: (State)
I. Odisha
II. Andaman and Nicobar Islands
III. Kerala
IV. Madhya Pradesh
(A) P-II, Q-IV, R-I, S-III
(B) P-I, Q-III, R-II, S-IV
(C) P-II, Q-I, R-IV, S-III
(D) P-IV, Q-II, R-I, S-III
(E) Answer not known

29. Match the following tribal development initiatives with their primary objective:

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CHAPTER 09

Social Geography: Population, Tribes and Linguistic Groups

1. Consider the following statements regarding the Dravidian language family:
I. Telugu is numerically the largest Dravidian language in India.
II. Brahui is a Dravidian language spoken outside India.
III. Malayalam is the oldest of all Dravidian languages.
Which of the statements given above is/are correct?
(A) I and II
(B) II and III
(C) Only I
(D) Only III
(E) Answer not known

2. According to the 2011 Census, what is the population density of India?
(A) 324 persons per sq km
(B) 412 persons per sq km
(C) 382 persons per sq km
(D) 456 persons per sq km
(E) Answer not known

3. Consider the following statements regarding Particularly Vulnerable Tribal Groups (PVTGs) in Tamil Nadu:
I. Todas are recognised as a PVTG in Tamil Nadu.
II. Irulas are primarily concentrated in the coastal plains.
III. Kotas are traditional artisans and musicians of the Nilgiris.
IV. Kurumbas are primarily known as deep-sea fisherfolk.
Which of the statements given above are correct?
(A) I, II and III
(B) I, III and IV
(C) I and III
(D) II and IV
(E) Answer not known

4. Which of the following best defines the term "Demographic Dividend"?
(A) Rapid population growth driven primarily by high birth rates
(B) Government financial subsidies distributed to senior citizens
(C) Natural population increase calculated via birth and death rates
(D) Economic growth potential from shifts in population age structure
(E) Answer not known

5. Consider the following statements regarding Classical languages in India:
I. Tamil was the first language to be declared a Classical language.
II. The Eighth Schedule of the Constitution currently lists six Classical languages.
III. Malayalam was declared a Classical language in 2013.
IV. High antiquity of its early texts over 1500-2000 years is a primary criterion.
V. A Classical language must have borrowed heavily from other modern languages.
Which of the statements given above are incorrect?
(A) I, II, III and IV
(B) II, III, IV and V
(C) II and V
(D) I and IV
(E) Answer not known

6. Select the correct answer from the options given below based on the following Assertion (A) and Reason (R):
Assertion (A): The sex ratio in Tamil Nadu is significantly higher than the national average.
Reason (R): Better socio-economic development and effective implementation of women's welfare schemes have positively impacted the sex ratio in Tamil Nadu.

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(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

7. Select the correct answer from the options given below based on the following Assertion (A) and Reason (R):
Assertion (A): The Todas of the Nilgiris place immense cultural and religious significance on the water buffalo.
Reason (R): The Toda economy and social system are entirely based on shifting agriculture in the lower plains.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

8. Match the following major tribal groups of India with their primary region of distribution:
List I: (Tribal Groups)
P. Bhils
Q. Santhals
R. Garo
S. Chenchus
List II: (Region)
I. Andhra Pradesh
II. Meghalaya
III. Jharkhand
IV. Rajasthan
(A) P-IV, Q-III, R-II, S-I
(B) P-III, Q-IV, R-I, S-II
(C) P-II, Q-I, R-IV, S-III
(D) P-I, Q-II, R-III, S-IV
(E) Answer not known

9. Match the following linguistic groups with their language families in India:
List I: (Language Family)
P. Austro-Asiatic
Q. Tibeto-Burman
R. Indo-Aryan
S. Dravidian
List II: (Languages)
I. Bodo
II. Marathi
III. Kurukh
IV. Munda
(A) P-IV, Q-I, R-II, S-III
(B) P-I, Q-IV, R-III, S-II
(C) P-IV, Q-II, R-I, S-III
(D) P-III, Q-I, R-II, S-IV
(E) Answer not known

10. Identify the correct statement regarding urbanisation in India according to Census 2011.
(A) Over 50 percent of India's population lives in urban areas.
(B) Goa is the most urbanised state in India by percentage.
(C) Uttar Pradesh has the highest percentage of urban population.
(D) The rural population has experienced a higher decadal growth rate than the urban population.
(E) Answer not known

11. Select the correct order of the following states based on their population density in descending order (highest to lowest), as per Census 2011:
(A) Bihar, West Bengal, Kerala, Uttar Pradesh
(B) West Bengal, Bihar, Uttar Pradesh, Kerala
(C) Bihar, Uttar Pradesh, West Bengal, Kerala
(D) Kerala, West Bengal, Bihar, Uttar Pradesh
(E) Answer not known

12. Which of the following states was NOT formed primarily on linguistic lines following the States Reorganisation Act of 1956?
(A) Andhra Pradesh
(B) Karnataka
(C) Jharkhand
(D) Kerala
(E) Answer not known

13. Arrange the following districts of Tamil Nadu in ascending order of their literacy rate (lowest to highest) as per Census 2011:
(A) Dharmapuri, Ariyalur, Krishnagiri, Kanniyakumari
(B) Ariyalur, Dharmapuri, Kanniyakumari, Krishnagiri
(C) Krishnagiri, Ariyalur, Dharmapuri, Kanniyakumari
(D) Dharmapuri, Krishnagiri, Ariyalur,

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Kanniyakumari
(E) Answer not known

14. Which factor most appropriately explains the high level of urbanisation in Tamil Nadu compared to other major Indian states?
(A) Abundance of major perennial river systems facilitating inland navigation
(B) Centralised clustering of all economic activities strictly within Chennai
(C) Dispersed industrialisation and a strong network of tier-II and tier-III towns
(D) Complete eradication of agricultural lands in the state
(E) Answer not known

15. Identify the correctly matched pair regarding the tribes of Tamil Nadu:
(A) Badagas - Hunter-gatherers of the Palani Hills
(B) Irulas - Traditionally associated with snake catching and forest produce
(C) Paliyans - Largest agricultural tribe of the Shevaroy Hills
(D) Malayali - Buffalo pastoralists of the Nilgiris
(E) Answer not known

16. Identify the incorrectly matched pair regarding the history of the Census in India:
(A) First synchronous census - 1881
(B) Year of Demographic Divide - 1921
(C) First census of independent India - 1951
(D) First fully digital census - 2011
(E) Answer not known

17. The Chennai Metropolitan Area (CMA) has faced recent proposals for expansion. Which of the following districts is entirely or partially integrated into the expanded CMA?
(A) Kancheepuram
(B) Tirunelveli
(C) Madurai
(D) Coimbatore
(E) Answer not known

18. The languages Santhali, Mundari, and Ho are classified under which of the following linguistic groups?
(A) Dravidian
(B) Tibeto-Burman
(C) Austro-Asiatic
(D) Indo-Aryan
(E) Answer not known

19. Identify the incorrect statement regarding the Malayali tribe of Tamil Nadu.
(A) They are exclusively hunter-gatherers with no agricultural practices.
(B) They are the largest Scheduled Tribe in Tamil Nadu.
(C) They primarily inhabit the Kolli Hills, Shevaroy Hills, and Kalrayan Hills.
(D) Their name translates to “people of the hills”.
(E) Answer not known

20. A population pyramid with a broad base and sharply tapering top indicates which of the following?
(A) High birth rate and low death rate
(B) Low birth rate and high death rate
(C) Low birth rate and low death rate
(D) High birth rate and high death rate
(E) Answer not known

21. Consider the following statements regarding the status of the Tamil language:
I. Tamil was declared a Classical language of India in 2004.
II. Tamil belongs to the Indo-Aryan family of languages.
III. There is a significant global Tamil diaspora in countries like Malaysia, Singapore, and Sri Lanka.
Which of the statements given above is/are correct?
(A) I and II
(B) I and III
(C) Only I
(D) Only III
(E) Answer not known

22. The Eklavya Model Residential Schools (EMRS) scheme is primarily aimed at which demographic group?
(A) Linguistic minorities
(B) Urban poor
(C) Scheduled Tribes
(D) Senior citizens
(E) Answer not known

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(E) Answer not known

51. Select the correct order of the following Tamil Nadu districts based on total population size in descending order as per Census 2011:
(A) Chennai, Kancheepuram, Vellore, Coimbatore
(B) Chennai, Coimbatore, Vellore, Kancheepuram
(C) Kancheepuram, Chennai, Coimbatore, Vellore
(D) Coimbatore, Chennai, Kancheepuram, Vellore
(E) Answer not known

52. Which of the following is NOT a recognized tribal group in Tamil Nadu?
(A) Irulas
(B) Todas
(C) Paliyans
(D) Santhals
(E) Answer not known

53. Arrange the following major states of India in ascending order of their Sex Ratio (lowest to highest) as per Census 2011:
(A) Haryana, Uttar Pradesh, West Bengal, Kerala
(B) Uttar Pradesh, Haryana, West Bengal, Kerala
(C) Haryana, West Bengal, Uttar Pradesh, Kerala
(D) Kerala, West Bengal, Uttar Pradesh, Haryana
(E) Answer not known

54. A country facing a rapid decline in its young population (0-14 years) and an expanding elderly population (65+ years) must most appropriately prioritize policy interventions in:
(A) Pediatric immunization programs
(B) Maternal mortality reduction schemes
(C) Pension and geriatric healthcare systems
(D) Construction of new primary schools
(E) Answer not known

55. Identify the correctly matched pair regarding the linguistic classification of languages in India:
(A) Bodo - Dravidian
(B) Kashmiri - Tibeto-Burman
(C) Tulu - Indo-Aryan
(D) Khasi - Austro-Asiatic
(E) Answer not known

56. Identify the incorrectly matched pair regarding the tribes and their prominent cultural trait:
(A) Badagas - Nomadic sea-faring navigators
(B) Todas - Barrel-shaped huts called 'Dogles'
(C) Kotas - Classical blacksmiths and musicians
(D) Irulas - Expert snake catchers
(E) Answer not known

57. The Van Dhan Yojana targets the socio-economic development of tribals primarily through:
(A) Relocating them to urban industrial hubs
(B) Value addition of Minor Forest Produce (MFP)
(C) Providing free agricultural tractors
(D) Banning tribal access to protected forests
(E) Answer not known

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58. Which of the following language groups is primarily concentrated in the Himalayan and Sub-Himalayan regions of India?
(A) Dravidian
(B) Tibeto-Burman
(C) Austro-Asiatic
(D) Indo-Aryan
(E) Answer not known

59. Identify the incorrect statement regarding the demographic trends in Tamil Nadu.
(A) The urban population percentage of Tamil Nadu is lower than the national average.
(B) The state's literacy rate is higher than the national average.
(C) Tamil Nadu has a lower decadal growth rate compared to the national average.
(D) Kanniyakumari district has the highest literacy rate in the state.
(E) Answer not known

60. The "Demographic Divide" in the history of the Indian Census refers to which year, after which India's population grew steadily?
(A) 1881
(B) 1951
(C) 1921
(D) 1971
(E) Answer not known

61. Consider the following statements regarding population distribution in India:

List I: (Initiative)
P. Van Dhan Yojana
Q. EMRS
R. TRIFED
S. Article 275(1) grants
List II: (Objective)
I. Quality residential education
II. Marketing of minor forest produce
III. Constitutional funding for tribal welfare
IV. Value addition and branding of tribal products
(A) P-IV, Q-I, R-II, S-III
(B) P-I, Q-IV, R-III, S-II
(C) P-II, Q-III, R-I, S-IV
(D) P-IV, Q-II, R-I, S-III
(E) Answer not known

30. Identify the correct statement regarding linguistic minorities in Tamil Nadu.
(A) Malayalam speakers are the largest linguistic minority in Tamil Nadu.
(B) Urdu has been completely removed from the linguistic census of Tamil Nadu.
(C) Telugu is spoken by a significant minority population in Tamil Nadu.
(D) Linguistic minorities have no constitutional rights to establish educational institutions.
(E) Answer not known

31. Select the correct chronological order in which the following languages were declared as Classical languages by the Government of India:
(A) Tamil, Sanskrit, Telugu, Kannada
(B) Sanskrit, Tamil, Kannada, Telugu
(C) Tamil, Telugu, Sanskrit, Kannada
(D) Tamil, Kannada, Telugu, Sanskrit
(E) Answer not known

32. Which of the following languages is NOT included in the Eighth Schedule of the Indian Constitution?
(A) Dogri
(B) Santhali
(C) Maithili
(D) English
(E) Answer not known

33. Arrange the following districts of Tamil Nadu in descending order of their population density (highest to lowest) as per Census 2011:
(A) Chennai, Kanniyakumari, Tiruvallur, Kancheepuram
(B) Chennai, Tiruvallur, Kanniyakumari, Kancheepuram
(C) Kanniyakumari, Chennai, Tiruvallur, Kancheepuram
(D) Chennai, Kancheepuram, Tiruvallur, Kanniyakumari
(E) Answer not known

34. Which of the following best describes the traditional lifestyle of the Paliyans of Tamil Nadu?
(A) Aggressive agrarian expansionists who focus on plantation farming
(B) Deep-water navigators and boat builders along the southern coast
(C) Nomadic hunter-gatherers historically dwelling in the Palani Hills
(D) Urban-based craftsmen specializing in intricate gold jewelry work
(E) Answer not known

35. Identify the correctly matched pair of tribe and their traditional region in Tamil Nadu:
(A) Kotas - Nilgiri Hills
(B) Malayali - Palani Hills
(C) Paliyans - Shevaroy Hills
(D) Badagas - Kolli Hills
(E) Answer not known

36. Identify the incorrectly matched pair regarding demographic terminology:
(A) Sex Ratio - Number of females per 1000 males
(B) Literacy Rate - Percentage of population aged 7 and above who can read and write
(C) Urban Agglomeration - A continuous urban spread constituting a town and its adjoining outgrowths
(D) Decadal Growth Rate - Population growth measured over a 15-year period
(E) Answer not known

37. Which state has the highest gap between male and female literacy rates according to Census 2011?
(A) Kerala
(B) Rajasthan
(C) Tamil Nadu
(D) Maharashtra
(E) Answer not known

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137. (D) Improved access to schools, healthcare, and local markets for rural populations.
The Pradhan Mantri Gram Sadak Yojana (PMGSY) has a profound socio-economic impact by providing all-weather road connectivity to rural areas in Tamil Nadu. This improved access is vital for rural populations as it allows them to reach schools and healthcare facilities more easily. Furthermore, better roads link local farmers to larger markets, reducing travel time and costs, which in turn boosts agricultural income and fosters regional economic integration.

138. (A) Both A and R are true and R is the correct explanation of A.
The transport and communication sector is a major contributor to Tamil Nadu's Gross State Domestic Product. This is because the state's vast manufacturing base, particularly in automobiles and electronics, as well as its massive IT services export industry, depend heavily on efficient logistics and digital networks. Without a robust system to move goods and transmit data, these key economic drivers could not be sustained, validating the reason provided.

139. (D) IT Expressway - Rajiv Gandhi Salai (OMR)
Rajiv Gandhi Salai, widely known as the Old Mahabalipuram Road (OMR), is the primary IT Expressway in Chennai. It houses a vast number of IT parks, technology companies, and research institutions, making it the most significant technological hub in the state. Other pairings like "Cyberabad" are associated with Hyderabad, and the most iconic and correctly matched IT corridor in Chennai remains the OMR, which drives regional growth.

140. (A) A strategic transition to decarbonize transport and reduce fossil fuel dependency.
Tamil Nadu's proactive Electric Vehicle (EV) policy and its focus on transitioning the MTC bus fleet to electric power indicate a strategic shift towards decarbonizing urban transport. This policy aims to reduce the state's dependency on fossil fuels and mitigate the environmental impact of public transportation. It reflects a broader commitment to sustainable urban development and the adoption of green technologies to ensure a cleaner and energy-efficient mobility future.

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I. Article 342 provides for the specification of Scheduled Tribes.
II. Bhils constitute the largest tribal group in India.
III. There are no recognized Scheduled Tribes in Punjab and Haryana.
IV. All tribes in India follow the exact same culture and speak Dravidian languages.
V. The Gonds are widely distributed across Central India.

Which of the statements given above are correct?
(A) I, II, III and V
(B) I, II, IV and V
(C) I, III and V
(D) II, IV and V
(E) Answer not known

46. Select the correct answer from the options given below based on the following Assertion (A) and Reason (R):
Assertion (A): The Kotas of the Nilgiris have historically maintained symbiotic relationships with neighboring tribes like the Todas and Badagas.
Reason (R): The Kotas were traditional artisans and potters who exchanged their goods for dairy products and agricultural produce.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

47. Select the correct answer from the options given below based on the following Assertion (A) and Reason (R):
Assertion (A): The decadal growth rate of population in India has shown a declining trend since 1981.
Reason (R): There has been a steady increase in the birth rate combined with a drastic increase in the death rate since 1981.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

48. Match the following Dravidian languages with the states where they have significant populations:
List I: (Language)
P. Telugu
Q. Kannada
R. Malayalam
S. Kurukh
List II: (State)
I. Jharkhand
II. Kerala
III. Andhra Pradesh
IV. Karnataka
(A) P-III, Q-IV, R-II, S-I
(B) P-IV, Q-III, R-I, S-II
(C) P-III, Q-II, R-IV, S-I
(D) P-I, Q-IV, R-II, S-III
(E) Answer not known

49. Match the following elements of Population Geography with their focus areas:
List I: (Concept)
P. Population Distribution
Q. Age Structure
R. Sex Composition
S. Literacy Rate
List II: (Focus Area)
I. Ratio between males and females
II. Spatial spread of people across a region
III. Educational attainment level
IV. Proportion of individuals in different age groups
(A) P-II, Q-IV, R-I, S-III
(B) P-IV, Q-II, R-I, S-III
(C) P-II, Q-I, R-IV, S-III
(D) P-I, Q-III, R-II, S-IV
(E) Answer not known

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50. Identify the correct statement regarding the Census of India.
(A) Decadal census operations conducted by the Ministry of Statistics and Programme Implementation
(B) The first synchronous census successfully conducted during the tenure of Lord Dalhousie
(C) Registrar General and Census Commissioner's office under Ministry of Home Affairs
(D) The comprehensive Census Act enacted by the British Parliament in the year 1935

38. When comparing the sex ratio of India and Tamil Nadu as per Census 2011, which of the following is true?
(A) Both India and Tamil Nadu have a sex ratio above 1000.
(B) India's sex ratio is 996, while Tamil Nadu's is 943.
(C) India's sex ratio is 943, while Tamil Nadu's is 996.
(D) Tamil Nadu has a lower sex ratio than the national average.
(E) Answer not known

39. Identify the incorrect statement regarding the Kurumbas of Tamil Nadu.
(A) They are traditionally forest dwellers in the Nilgiris and surrounding areas.
(B) They are known for their knowledge of medicinal herbs and honey collection.
(C) They are divided into various sub-groups like Alu, Jenu, and Betta Kurumbas.
(D) They are the only tribe in Tamil Nadu classified as Indo-Aryan speakers.
(E) Answer not known

40. A sharp increase in the dependency ratio in Tamil Nadu over the next three decades can be primarily inferred to cause which of the following?
(A) Strain on the healthcare system and geriatric care infrastructure
(B) Rapid increase in infant mortality rates
(C) Exponential growth of the primary education sector
(D) Immediate reversal of rural-to-urban migration
(E) Answer not known

41. Consider the following statements regarding the racial groups of India:
I. The Negroid race is believed to be the earliest inhabitants of India, with remnants in the Andaman Islands.
II. The Mongoloid racial characteristics are predominantly found in the northeastern states of India.
III. The Caucasoid race is completely absent in the Indian subcontinent.
Which of the statements given above is/are incorrect?
(A) I and II
(B) II and III
(C) Only I
(D) Only III
(E) Answer not known

42. According to the Eighth Schedule of the Indian Constitution, how many languages were originally recognized when the Constitution was enacted?
(A) 12
(B) 14
(C) 18
(D) 22
(E) Answer not known

43. Consider the following statements regarding internal migration in India:
I. Interstate migration is primarily driven by employment and economic opportunities.
II. Maharashtra and Delhi are major destination states for internal migrants.
III. Intrastate migration involves shorter distances and is statistically less frequent than interstate migration.
IV. Uttar Pradesh and Bihar are major source states for outbound migrants.
Which of the statements given above are correct?
(A) I, II and IV
(B) II, III and IV
(C) I and III
(D) I and IV
(E) Answer not known

44. What defines a 'Smart City' under the Smart Cities Mission of India?
(A) A city exclusively built for information technology sectors with restricted residential zones
(B) A rural village rapidly converted into a modern metropolis within a five-year timeframe
(C) An urban area providing core infrastructure and high quality of life through smart solutions
(D) A carbon-neutral city utilizing only renewable energy sources and electric-only transport
(E) Answer not known

45. Consider the following statements regarding the tribes of India:

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I. Climate and topography are major physical factors affecting population distribution.
II. The Northern Plains are highly populated due to fertile soils and flat terrain.
III. Socio-economic factors have no influence on population density in India.

Which of the statements given above is/are correct?
(A) I and II
(B) II and III
(C) Only I
(D) Only III
(E) Answer not known

62. According to the 2011 Census, what is the approximate literacy rate of Tamil Nadu?
(A) 74.04%
(B) 82.14%
(C) 80.09%
(D) 94.00%
(E) Answer not known

63. Consider the following statements about Urban Agglomerations (UAs) in India:
I. An Urban Agglomeration must consist of at least one statutory town.
II. Its total population should not be less than 20,000 as per the 2001 Census.
III. Outgrowths like railway colonies or university campuses can form part of a UA.
IV. Chennai is recognized as an Urban Agglomeration.

Which of the statements given above are correct?
(A) I, II and IV
(B) I, III and IV
(C) I and III
(D) II and IV
(E) Answer not known

64. How is the "dependency ratio" mathematically expressed in demography?
(A) Proportional ratio of the population aged 15-59 relative to the total population
(B) Ratio of children (0-14) and elderly (60+) to working-age (15-59) population
(C) Calculated ratio of males compared to females within the primary working-age group
(D) Comparative ratio between urban-based dependents and those residing in rural areas
(E) Answer not known

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65. Consider the following statements about the rural-urban distribution of India:
I. Over 68% of India's population lives in rural areas.
II. Migration from rural to urban areas is a significant factor in urbanisation.
III. The absolute increase in population is more in rural areas than in urban areas as per Census 2011.
IV. Tamil Nadu has a higher percentage of urban population than Himachal Pradesh.
V. Urbanisation has led to the proliferation of slums in metropolitan cities.

Which of the statements given above are incorrect?
(A) I, II, IV and V
(B) II, III, IV and V
(C) Only III
(D) III and V
(E) Answer not known

66. Select the correct answer from the options given below based on the following Assertion (A) and Reason (R):
Assertion (A): Tamil Nadu is one of the most urbanised states in India.
Reason (R): The state has witnessed a balanced spatial distribution of industries and a strong network of transport infrastructure.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

67. Select the correct answer from the options given below based on the following Assertion (A) and Reason (R):
Assertion (A): The Particularly Vulnerable Tribal Groups (PVTGs) require special developmental programmes compared to other Scheduled Tribes.
Reason (R): PVTGs are characterized by a pre-agricultural level of technology, stagnant or declining population, and extreme educational backwardness.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct

98. Which of the following languages belongs to the Indo-Aryan linguistic group?
(A) Manipuri
(B) Telugu
(C) Marathi
(D) Munda
(E) Answer not known

99. Identify the incorrect statement regarding the Dravidian language family.
(A) Hindi is heavily derived from Proto-Dravidian roots.
(B) It is the second largest language family in India.
(C) It is divided into South, Central, and North Dravidian subgroups.
(D) Gondi is a Central Dravidian language.
(E) Answer not known

100. Which of the following factors is least relevant when explaining the high population density in the Gangetic plains?
(A) Fertile alluvial soil
(B) Availability of flat terrain for agriculture
(C) Abundant water supply from perennial rivers
(D) Extreme isolation from historical trade routes
(E) Answer not known

101. Consider the following statements about the States Reorganisation Commission (SRC) of 1953:
I. It was headed by Fazl Ali.
II. K.M. Panikkar and H.N. Kunzru were its other members.
III. It completely rejected the "one language, one state" theory.
Which of the statements given above is/are correct?
(A) I and II
(B) II and III
(C) Only I
(D) Only III
(E) Answer not known

102. According to the Census of 2011, what is the national average sex ratio of India?
(A) 927 females per 1000 males
(B) 933 females per 1000 males
(C) 943 females per 1000 males
(D) 940 females per 1000 males
(E) Answer not known

103. Consider the following statements regarding the tribes of Tamil Nadu:
I. Badagas are officially recognised as a Scheduled Tribe in the Indian Constitution.
II. The Toda community is known for its unique barrel-shaped huts.
III. Tamil Nadu has 36 officially recognised Scheduled Tribes.
IV. Most tribes in Tamil Nadu reside in the Western and Eastern Ghats regions.
Which of the statements given above are correct?
(A) I, II and III
(B) II, III and IV
(C) I and IV
(D) II and III
(E) Answer not known

104. Which of the following is the most comprehensive definition of "Population Geography"?
(A) Spatial study of population distribution, composition, migration, and growth relative to environment
(B) The physical study of earth's geographical features, climate systems, and atmospheric layers
(C) Scientific analysis of seasonal animal migration patterns and wildlife movement across continents
(D) Geographical analysis of regional electoral voting patterns and political behaviour of citizens
(E) Answer not known

105. Consider the following statements about demographic features:
I. Infant Mortality Rate (IMR) measures deaths of children under one year per 1,000 live births.
II. Life expectancy at birth has been continuously decreasing in India since 1951.
III. A high literacy rate is positively correlated with a lower total fertility rate.
IV. Age structure is visually represented by a population pyramid.
V. The working-age population is typically defined as 15 to 59 years.
Which of the statements given above are correct?
(A) I, II, III and IV

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to cities
(E) Answer not known

75. Identify the correctly matched pair of tribal welfare initiatives:
(A) Tribal Sub-Plan (TSP) - Channels funds proportional to the tribal population for their development
(B) Tamil Nadu Adi Dravidar Housing and Development Corporation (TAHDCO) - Exclusively funds urban upper-class housing
(C) Comprehensive Tribal Development Programme - Aims to relocate all tribes to coastal areas
(D) EMRS - Focuses on providing foreign university scholarships to tribal students
(E) Answer not known

76. Identify the incorrectly matched pair of racial groups and their associated physical traits (as historically classified):
(A) Negroid - Groups characterized by dark skin, woolly hair, and broad flat nasal features
(B) Mongoloid - Groups showing yellowish skin, epicanthic eye folds, and straight hair texture
(C) Australoid - Racial group found exclusively in the Himalayas and absent in the South
(D) Caucasoid - Groups identified by light skin, prominent narrow noses, and wavy hair patterns
(E) Answer not known

77. The term "Global Tamil Diaspora" refers to people of Tamil origin primarily settled in which regions due to historical migrations?
(A) Scandinavia and Eastern Europe
(B) South America and Antarctica
(C) Central Asia and Mongolia
(D) Sri Lanka, Malaysia, Singapore, and South Africa
(E) Answer not known

78. Comparing the population pyramids of India and Japan, what is the most striking difference?
(A) India maintains a narrow population base, while Japan displays a significantly wide base
(B) Both nations possess identical bell-shaped pyramids with uniform population distribution
(C) India shows a wide youth base, while Japan displays a narrow base due to an ageing population
(D) Japan sustains a much higher national birth rate than the average currently seen in India
(E) Answer not known

79. Identify the incorrect statement regarding the linguistic composition of Tamil Nadu.
(A) Tamil is spoken by the vast majority of the population.
(B) Hindi is the official language of the state government alongside Tamil.
(C) Telugu speakers form the second largest linguistic group in the state.
(D) Sourashtra is a notable linguistic minority language spoken in regions like Madurai.
(E) Answer not known

80. A decline in the decadal growth rate of India's population between 2001 and 2011 most strongly infers that:
(A) The national death rate has recently surpassed the birth rate for the first time in history
(B) Massive levels of outward emigration from India have occurred during this specific period
(C) The average life expectancy of the Indian population has undergone a drastic reduction
(D) Family planning and socio-economic growth have begun to successfully lower fertility rates
(E) Answer not known

81. Consider the following statements regarding the history of the Census in India:
I. The first non-synchronous census was conducted in 1872.
II. The Census operations are strictly halted during times of war without exception.
III. The demographic data collected is entirely useless for economic planning.
Which of the statements given above is/are correct?
(A) I and II
(B) II and III
(C) Only I
(D) Only III

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explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

68. Match the demographic concepts with their correct definitions:
List I: (Concept)
P. Birth Rate
Q. Death Rate
R. Migration
S. Natural Growth
List II: (Definition)
I. Difference between births and deaths in a year
II. Number of live births per 1,000 persons in a year
III. Movement of people across regions and territories
IV. Number of deaths per 1,000 persons in a year
(A) P-II, Q-IV, R-III, S-I
(B) P-I, Q-II, R-IV, S-III
(C) P-IV, Q-III, R-I, S-II
(D) P-II, Q-I, R-III, S-IV
(E) Answer not known

69. Match the recognized Classical languages with the year they were accorded the status:
List I: (Language)
P. Tamil
Q. Sanskrit
R. Telugu
S. Odia
List II: (Year)
I. 2004
II. 2005
III. 2008
IV. 2014
(A) P-II, Q-I, R-IV, S-III
(B) P-I, Q-II, R-III, S-IV
(C) P-III, Q-IV, R-I, S-II
(D) P-I, Q-III, R-II, S-IV
(E) Answer not known

70. Identify the correct statement regarding the proposed digital Census of India.
(A) It was completed on time without any delays.
(B) It eliminates the collection of data regarding Scheduled Castes and Scheduled Tribes.
(C) It is planned to be the first digital census in the history of India.
(D) It restricts data collection only to urban areas.
(E) Answer not known

71. Select the correct order of the decadal population growth rate in India over the following periods (from highest growth rate to lowest):
(A) 1961-1971, 1981-1991, 2001-2011
(B) 2001-2011, 1981-1991, 1961-1971
(C) 1981-1991, 1961-1971, 2001-2011
(D) 1961-1971, 2001-2011, 1981-1991
(E) Answer not known

72. Which of the following is NOT a characteristic feature used to define a Classical language in India?
(A) Being the official language of at least five states in modern India
(B) High antiquity of its early texts over a period of 1500-2000 years
(C) A body of ancient literature/texts considered a valuable heritage by generations
(D) A literary tradition that is completely original and not borrowed from another speech community
(E) Answer not known

73. Arrange the following states in descending order of their total tribal population according to Census 2011:
(A) Madhya Pradesh, Maharashtra, Odisha, Rajasthan
(B) Maharashtra, Madhya Pradesh, Rajasthan, Odisha
(C) Odisha, Rajasthan, Madhya Pradesh, Maharashtra
(D) Madhya Pradesh, Odisha, Maharashtra, Rajasthan
(E) Answer not known

74. Which of the following is the most appropriate reason for the significant rural-to-urban male migration in India?
(A) Search for better educational facilities for female children
(B) Employment and better economic opportunities
(C) Avoidance of tribal conflicts in rural areas
(D) Government mandates relocating rural men

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89. Match the following migration streams with their predominant characteristic in India:
List I: (Migration Stream)
P. Rural to Rural
Q. Rural to Urban
R. Urban to Urban
S. Urban to Rural
List II: (Characteristic)
I. Dominated by male migrants for employment
II. Dominated by female migrants due to marriage
III. Reverse migration often seen post-retirement or during crises
IV. Movement between cities for better corporate/institutional opportunities
(A) P-II, Q-I, R-IV, S-III
(B) P-I, Q-II, R-III, S-IV
(C) P-II, Q-III, R-I, S-IV
(D) P-IV, Q-I, R-II, S-III
(E) Answer not known

90. Identify the correct statement regarding the linguistic reorganisation of states in India.
(A) The JVP Committee strongly recommended the immediate creation of linguistic states in 1948.
(B) The death of Potti Sriramulu expedited the creation of Andhra state, the first linguistic state.
(C) The States Reorganisation Act was passed in 1947.
(D) The Fazl Ali Commission rejected language as a basis for state reorganisation entirely.
(E) Answer not known

91. Select the correct order of the following tribes of Tamil Nadu based on their approximate population size (from largest to smallest):
(A) Malayali, Irula, Kurumba, Toda
(B) Toda, Kurumba, Irula, Malayali
(C) Irula, Malayali, Toda, Kurumba
(D) Malayali, Toda, Irula, Kurumba
(E) Answer not known

92. Which of the following is an exception to the 'pull factors' of migration?
(A) Better employment opportunities
(B) Higher wages
(C) Natural disasters and unemployment
(D) Better healthcare and educational facilities
(E) Answer not known

93. Arrange the following states in descending order based on their percentage of urban population as per Census 2011:
(A) Goa, Mizoram, Tamil Nadu, Kerala
(B) Tamil Nadu, Goa, Mizoram, Kerala
(C) Mizoram, Goa, Kerala, Tamil Nadu
(D) Goa, Tamil Nadu, Mizoram, Kerala
(E) Answer not known

94. The 'dependency ratio' is a crucial demographic indicator. A high dependency ratio implies that:
(A) A significantly large proportion of the total population is in the working-age group
(B) The national economy possesses a vast surplus of labour across all industrial sectors
(C) Working-age populations face heavier burdens supporting non-working age groups
(D) The country has successfully achieved the final stage of the demographic transition model
(E) Answer not known

95. Identify the correctly matched pair of the Indian state and the language spoken by the majority of its population:
(A) Nagaland - Meitei
(B) Meghalaya - Khasi
(C) Tripura - Bodo
(D) Sikkim - Santhali
(E) Answer not known

96. Identify the incorrectly matched pair regarding tribes and their traditional livelihood:
(A) Todas - Pastoralism (Buffalo rearing)
(B) Irulas - Snake catching and rat catching
(C) Kurumbas - Gathering honey and forest produce
(D) Kotas - Deep-sea fishing
(E) Answer not known

97. The Shevaroy and Kolli Hills of Tamil Nadu are predominantly inhabited by which of the following tribal communities?
(A) Malayali
(B) Paliyans
(C) Badagas
(D) Cholanaikkans
(E) Answer not known

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(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

128. Match the following demographic terms with their common unit of measurement:
List I: (Concept)
P. Population Density
Q. Sex Ratio
R. Infant Mortality Rate
S. Literacy Rate
List II: (Unit)
I. Females per 1,000 males
II. Persons per square kilometer
III. Percentage of population
IV. Deaths per 1,000 live births
(A) P-II, Q-I, R-IV, S-III
(B) P-I, Q-II, R-III, S-IV
(C) P-II, Q-IV, R-I, S-III
(D) P-III, Q-I, R-IV, S-II
(E) Answer not known

129. Match the following Classical Languages with their language family:
List I: (Language)
P. Tamil
Q. Sanskrit
R. Odia
S. Kannada
List II: (Family)
I. Indo-Aryan
II. Dravidian
III. Dravidian
IV. Indo-Aryan
(A) P-II, Q-I, R-IV, S-III
(B) P-I, Q-II, R-III, S-IV
(C) P-III, Q-I, R-II, S-IV
(D) P-IV, Q-III, R-I, S-II
(E) Answer not known

130. Identify the correct statement regarding population growth trends in India.
(A) The era from 1901 to 1921 is historically identified as a period of rapid high growth
(B) The total population of India effectively doubled during the decade of 2001 and 2011
(C) 1921 is the 'Great Divide' because population growth was negative prior to this period
(D) National decadal growth rates have been increasing in a continuous trend since 1981
(E) Answer not known

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131. Select the correct order of Tamil Nadu districts showing the highest to lowest literacy rates as per Census 2011:
(A) Kanniyakumari, Chennai, Thoothukudi
(B) Chennai, Kanniyakumari, Thoothukudi
(C) Thoothukudi, Chennai, Kanniyakumari
(D) Kanniyakumari, Thoothukudi, Chennai
(E) Answer not known

132. All of the following are explicit goals of the Eklavya Model Residential Schools (EMRS) scheme, EXCEPT:
(A) Comprehensive physical, mental, and socially relevant development of tribal students
(B) Focus on academic education alongside sports and skill development
(C) Preservation of local art and culture
(D) Mandatory conversion of tribal students to mainstream urban religions
(E) Answer not known

133. Arrange the following states in ascending order of their population density (lowest to highest) as per Census 2011:
(A) Arunachal Pradesh, Mizoram, Sikkim, Nagaland
(B) Mizoram, Arunachal Pradesh, Sikkim, Nagaland
(C) Arunachal Pradesh, Sikkim, Mizoram, Nagaland
(D) Sikkim, Arunachal Pradesh, Nagaland, Mizoram
(E) Answer not known

134. A bell-shaped population pyramid with a relatively equal distribution across age cohorts up to older age groups most strongly conceptualizes a population that is:
(A) Expanding rapidly
(B) Experiencing a massive baby boom
(C) Stable with low birth and death rates
(D) Facing an immediate demographic collapse
(E) Answer not known

135. Identify the correctly matched pair regarding constitutional articles and their subject:
(A) Article 341 - Scheduled Tribes

(B) I, III, IV and V
(C) Only II is incorrect
(D) II and V
(E) Answer not known

106. Select the correct answer from the options given below based on the following Assertion (A) and Reason (R):
Assertion (A): In India, interstate migration is significantly higher for males than for females.
Reason (R): Males predominantly migrate across state borders for employment and business opportunities, while female migration is largely intrastate due to marriage.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

107. Select the correct answer from the options given below based on the following Assertion (A) and Reason (R):
Assertion (A): The male-female literacy gap in Tamil Nadu is narrower than the national average.
Reason (R): Historical social reform movements and robust mid-day meal schemes have boosted female school enrollment in Tamil Nadu.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

108. Match the following languages with their respective Constitutional Schedule additions:
List I: (Language)
P. Sindhi
Q. Konkani, Manipuri, Nepali
R. Bodo, Dogri, Maithili, Santhali
S. Initial Constitution (14 languages)
List II: (Amendment/Year)
I. 21st Amendment Act, 1967
II. 71st Amendment Act, 1992
III. 92nd Amendment Act, 2003
IV. 1950
(A) P-I, Q-II, R-III, S-IV
(B) P-II, Q-I, R-IV, S-III
(C) P-I, Q-III, R-II, S-IV
(D) P-IV, Q-II, R-I, S-III
(E) Answer not known

109. Match the following extreme demographic districts of Tamil Nadu (Census 2011):
List I: (Demographic Record)
P. Highest Literacy Rate
Q. Lowest Literacy Rate
R. Highest Sex Ratio
S. Lowest Sex Ratio
List II: (District)
I. Nilgiris
II. Dharmapuri
III. Kanniyakumari
IV. Salem
(A) P-III, Q-II, R-I, S-IV
(B) P-I, Q-II, R-III, S-IV
(C) P-III, Q-IV, R-II, S-I
(D) P-II, Q-III, R-IV, S-I
(E) Answer not known

110. Identify the correct statement about the Smart Cities Mission in Tamil Nadu.
(A) Tamil Nadu has no cities included in the Smart Cities Mission.
(B) The mission aims to convert all rural villages in Tamil Nadu into smart cities by 2025.
(C) Cities like Chennai, Coimbatore, and Madurai are part of the Smart Cities Mission to upgrade urban infrastructure.
(D) Smart cities in Tamil Nadu are completely exempt from state taxes.
(E) Answer not known

111. Select the correct order of South Indian states in terms of their urbanisation percentage (highest to lowest) as per Census 2011:
(A) Tamil Nadu, Kerala, Karnataka, Andhra Pradesh
(B) Kerala, Tamil Nadu, Karnataka, Andhra Pradesh
(C) Karnataka, Tamil Nadu, Andhra Pradesh, Kerala
(D) Tamil Nadu, Karnataka, Kerala, Andhra Pradesh
(E) Answer not known

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112. Which of the following states is NOT among the highly densely populated states (density > 800) in India?
(A) Bihar
(B) West Bengal
(C) Kerala
(D) Rajasthan
(E) Answer not known

113. Arrange the following districts of Tamil Nadu in ascending order of Sex Ratio (lowest to highest) as per Census 2011:
(A) Dharmapuri, Salem, Chennai, Nilgiris
(B) Nilgiris, Chennai, Salem, Dharmapuri
(C) Salem, Dharmapuri, Chennai, Nilgiris
(D) Dharmapuri, Chennai, Salem, Nilgiris
(E) Answer not known

114. The primary objective of establishing Eklavya Model Residential Schools (EMRS) is most appropriately described as:
(A) Providing specialized military and tactical training programs to indigenous tribal youth
(B) Teaching ancient classical languages and linguistic history to visiting foreign students
(C) Imparting quality middle and high-level education to remote Scheduled Tribe students
(D) Training local tribal populations exclusively for entry-level manual agricultural labour
(E) Answer not known

115. Identify the correctly matched pair regarding the tribal groups of the Nilgiris:
(A) Badagas - Primarily agriculturalists closely linked to tea plantations
(B) Kotas - Primarily hunter-gatherers
(C) Todas - Primarily deep-sea fishers
(D) Kurumbas - Primarily urban merchants
(E) Answer not known

116. Identify the incorrectly matched pair regarding the constitutional protections for linguistic minorities:
(A) Article 29 - Protection of interests of minorities
(B) Article 30 - Right of minorities to establish educational institutions
(C) Article 350A - Facilities for instruction in mother-tongue at primary stage
(D) Article 343 - Declares Tamil as the sole official language of India
(E) Answer not known

117. In which year was the Tamil Nadu Adi Dravidar and Tribal Welfare Department formally established to focus specifically on marginalized communities?
(A) 1947
(B) 1988
(C) 2005
(D) 2014
(E) Answer not known

118. When comparing the historical classification of the Negroid and Mongoloid racial groups in India, which physical feature was primarily used to distinguish Mongoloids?
(A) Dark skin pigmentation
(B) Broad, flat nose
(C) Epicanthic fold of the eye
(D) Woolly hair
(E) Answer not known

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119. Identify the incorrect statement regarding the linguistic composition of India.
(A) Indo-Aryan languages are spoken by the largest percentage of the Indian population.
(B) The Dravidian language family is predominantly found in South India.
(C) Austro-Asiatic languages are primarily spoken by tribal communities in Central and Eastern India.
(D) Tibeto-Burman languages are natively spoken by the majority of the population in Kerala.
(E) Answer not known

120. The extreme isolation of the Cholanaikkan tribe in Kerala and the Paliyans in Tamil Nadu infers that:
(A) They possess high vulnerability and require specialized PVTG protection frameworks.
(B) They have heavily integrated into modern IT industries.
(C) They are the most populous tribes in their respective states.
(D) They exclusively speak Indo-Aryan languages.
(E) Answer not known

121. Consider the following statements about the Paliyans of Tamil Nadu:
I. They are predominantly found in the Palani Hills and Western Ghats.
II. Historically, they were a nomadic hunter-gatherer community.
III. They are known for establishing large-scale mechanized agriculture.
Which of the statements given above is/are correct?
(A) I and II
(B) II and III
(C) Only I
(D) Only III
(E) Answer not known

122. Which state in India recorded the highest sex ratio according to Census 2011?
(A) Tamil Nadu
(B) Kerala
(C) Andhra Pradesh
(D) Chhattisgarh
(E) Answer not known

123. Consider the following statements regarding the demographic dividend in India:
I. India is currently passing through the phase of demographic dividend.
II. A demographic dividend occurs when the dependency ratio is at its peak.
III. It provides an opportunity for rapid economic growth due to a larger working-age population.
IV. Skill development is crucial to realizing the potential of the demographic dividend.
Which of the statements given above are correct?
(A) I, II and III
(B) I, III and IV
(C) II, III and IV
(D) I and IV
(E) Answer not known

124. The Tamil Nadu Adi Dravidar Housing and Development Corporation (TAHDCO) was incorporated for the economic development of which sections?
(A) Economically Weaker Sections of General Categories
(B) Religious Minorities only
(C) Scheduled Castes and Scheduled Tribes
(D) Non-Resident Indians from Tamil Nadu
(E) Answer not known

125. Consider the following statements regarding the growth challenges of the Chennai Metropolitan Area (CMA):
I. Rapid urbanisation has led to the depletion of groundwater resources.
II. Encroachment of water bodies has increased vulnerability to urban flooding.
III. The CMA faces a shortage of affordable housing for lower-income groups.
IV. The population of CMA is steadily decreasing due to reverse migration.
V. Traffic congestion and solid waste management are critical infrastructural challenges.
Which of the statements given above are correct?
(A) I, II, III and V
(B) I, III, IV and V
(C) I, II, III, V
(D) IV and V
(E) Answer not known

126. Select the correct answer from the options given below based on the following Assertion (A) and Reason (R):
Assertion (A): The linguistic reorganisation of states in 1956 helped in strengthening the unity of India.
Reason (R): It accommodated regional linguistic aspirations, thereby preventing balkanization based on language grievances.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

127. Select the correct answer from the options given below based on the following Assertion (A) and Reason (R):
Assertion (A): The Toda embroidery work, known as 'Pukhoor', is an internationally recognised craft.
Reason (R): The Todas are a major industrial workforce producing textiles in large factories in Coimbatore.
(A) Both A and R are true and R is the correct explanation of A.

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(E) Answer not known

82. How many tribal groups in India are officially recognized as Particularly Vulnerable Tribal Groups (PVTGs)?
(A) 50
(B) 100
(C) 75
(D) 150
(E) Answer not known

83. Consider the following languages added to the Eighth Schedule by the 92nd Constitutional Amendment Act of 2003:
I. Bodo
II. Dogri
III. Maithili
IV. Santhali
Which of the statements given above are correct?
(A) I, II and III
(B) II, III and IV
(C) I, III and IV
(D) I, II, III and IV
(E) Answer not known

84. The first synchronous census of India was held in which year?
(A) 1872
(B) 1901
(C) 1947
(D) 1881
(E) Answer not known

85. Consider the following statements about the Constitutional provisions for Scheduled Tribes:
I. Article 366 (25) defines Scheduled Tribes.
II. The President can specify Scheduled Tribes for a state after consulting the Governor.
III. Parliament can amend the list of Scheduled Tribes by law.
IV. Only forest-dwelling communities can be declared as Scheduled Tribes.
V. The Fifth and Sixth Schedules contain special provisions for the administration of tribal areas.
Which of the statements given above are correct?
(A) I, II, III and V
(B) II, III, IV and V
(C) I, II, III, V
(D) I and IV
(E) Answer not known

86. Select the correct answer from the options given below based on the following Assertion (A) and Reason (R):
Assertion (A): The ageing population in Tamil Nadu is becoming a major socio-economic concern for state planners.
Reason (R): Increased life expectancy and a significant drop in fertility rates have led to a higher proportion of elderly citizens in the state.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

87. Select the correct answer from the options given below based on the following Assertion (A) and Reason (R):
Assertion (A): The Dravidian racial and linguistic group is entirely confined to the geographic boundaries of South India.
Reason (R): Dravidian languages like Kurukh and Brahui are spoken in central/northern India and Pakistan, respectively.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

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88. Match the following tribes of Tamil Nadu with their traditional geographical location:
List I: (Tribes)
P. Todas
Q. Paliyans
R. Malayali
S. Kanikkar
List II: (Location)
I. Shevaroy Hills
II. Palani Hills
III. Nilgiri Hills
IV. Agasthyamalai Hills
(A) P-III, Q-II, R-I, S-IV
(B) P-II, Q-III, R-I, S-IV
(C) P-III, Q-I, R-II, S-IV
(D) P-I, Q-II, R-IV, S-III
(E) Answer not known

(B) Article 342 - Scheduled Castes
(C) Article 17 - Protection of linguistic minorities
(D) Article 330 - Reservation of seats for SCs and STs in the Lok Sabha
(E) Answer not known

136. Identify the incorrectly matched pair regarding tribes and their regions in India:
(A) Chenchus - Punjab
(B) Lepchas - Sikkim
(C) Gaddi - Himachal Pradesh
(D) Jarawas - Andaman Islands
(E) Answer not known

137. What was the percentage of the rural population in India as per the 2011 Census?
(A) 31.16%
(B) 68.84%
(C) 50.00%
(D) 74.04%
(E) Answer not known

138. Which of the following is classified as a Central Dravidian language?
(A) Tamil
(B) Gondi
(C) Kannada
(D) Kurukh
(E) Answer not known

139. Identify the incorrect statement regarding the demographic terms.
(A) 'Total Fertility Rate' measures the number of children born per 1,000 men in a population.
(B) 'Fecundity' is the physiological capacity of a woman to reproduce.
(C) 'Morbidity' refers to the occurrence of diseases in a population.
(D) 'Net Migration Rate' is the difference between immigrants and emigrants of an area.
(E) Answer not known

140. Which of the following factors is the least relevant in determining the age structure of a population?
(A) Fertility rate
(B) Mortality rate
(C) Longitude of the region
(D) Migration
(E) Answer not known

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59. (A) The urban population percentage of Tamil Nadu is lower than the national average.
Tamil Nadu is one of the most urbanised states in India. According to the 2011 Census, nearly 48.4% of its population lives in urban areas, which is significantly higher than the national average of approximately 31.16%. The state also has a high literacy rate, and Kanniyakumari is indeed the district with the highest literacy in the state.

60. (C) 1921
The year 1921 is known as the "Year of the Great Divide" in Indian demographic history. It is the only census year in which India recorded a negative population growth rate, largely due to famines and the influenza epidemic. After 1921, India's population began to grow steadily and then rapidly, marking a transition in the growth trajectory.

61. (A) I and II
Physical factors like climate and topography are primary determinants of where people live. The Northern Plains are highly populated because their fertile alluvial soils and flat land are ideal for agriculture and infrastructure. Statement three is incorrect because socio-economic factors like industrialization, urbanization, and employment opportunities also significantly influence population density and spatial distribution across India.

62. (C) 80.09%
According to the 2011 Census, the literacy rate of Tamil Nadu was recorded at 80.09%. This was significantly higher than the national average of 74.04%. Among the genders, male literacy in the state was approximately 86.77%, while female literacy was about 73.44%. These figures demonstrate the state's strong emphasis on education and social development.

63. (B) I, III and IV
An Urban Agglomeration consists of a continuous urban spread, which must include at least one statutory town. Outgrowths like railway colonies or campuses can be included if they are contiguous to the town. Chennai is a prime example of such an agglomeration. Statement two is incorrect because the population threshold for a UA was higher than 20,000.

64. (B) Ratio of children (0-14) and elderly (60+) to working-age (15-59) population
The dependency ratio measures the pressure on the productive part of the population. It is calculated by taking the number of dependents, typically those aged 0-14 and 60 or above, and dividing it by the total working-age population, usually defined as those aged 15-59. This ratio helps economists understand the potential burden on the national economy and social services.

65. (C) Only III
According to the 2011 Census, for the first time in history, the absolute increase in population was more in urban areas than in rural areas. All other statements are correct: over 68% of Indians live in villages, migration drives urbanization, Tamil Nadu has a very high urban percentage, and urbanization has indeed led to the growth of metropolitan slums.

66. (A) Both A and R are true and R is the correct explanation of A.
Tamil Nadu is recognized as a leader in urbanization among Indian states. This high level of urban growth is not concentrated in just one city but is balanced across the state. The reason is the presence of industrial clusters and a strong transportation network that connects small and medium towns, facilitating widespread economic development and urban migration.

67. (A) Both A and R are true and R is the correct explanation of A.
Particularly Vulnerable Tribal Groups represent the most marginalized sections among Scheduled Tribes. They face unique challenges like declining populations and very low literacy levels. Because they still use primitive agricultural technologies and live in extreme isolation, they require specifically designed developmental programs and funding that differ from those provided to other, more integrated tribal communities.

68. (A) P-II, Q-IV, R-III, S-I
The birth rate is the number of live births per 1,000 people annually. The death rate is the number of deaths per 1,000 people in a year. Migration refers to the movement of people across territories, either permanently or temporarily. Natural

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10. (B) Goa is the most urbanised state in India by percentage.
According to the 2011 Census, Goa is the most urbanised state in India, with 62.17% of its population living in urban areas. While Tamil Nadu and Maharashtra have high urban populations, Goa leads by percentage. The overall urban population of India is approximately 31.16%, which is far below the fifty percent mark mentioned.

11. (A) Bihar, West Bengal, Kerala, Uttar Pradesh
Population density varies significantly across Indian states based on geography and resources. As per the 2011 Census, Bihar has the highest density with 1,106 persons per square kilometer. It is followed by West Bengal with 1,028, Kerala with 860, and Uttar Pradesh with 829. These four states represent the most densely populated regions.

12. (C) Jharkhand
Andhra Pradesh, Karnataka, and Kerala were reorganized or formed primarily on linguistic lines following the States Reorganisation Act of 1956. In contrast, Jharkhand was created much later, in the year 2000. Its formation was based on geographical, ethnic, and developmental considerations rather than being part of the original 1956 linguistic reorganization of Indian states.

13. (A) Dharmapuri, Ariyalur, Krishnagiri, Kanniyakumari
Dharmapuri recorded the lowest literacy rate in Tamil Nadu during the 2011 Census. Following it in ascending order are Ariyalur and Krishnagiri. Kanniyakumari stands at the opposite end of the spectrum, consistently recording the highest literacy rate in the state. This ranking reflects the spatial disparity in educational attainment across the various districts of Tamil Nadu.

14. (C) Dispersed industrialisation and a strong network of tier-II and tier-III towns
Tamil Nadu's high level of urbanisation is attributed to its unique model of dispersed industrialisation. Unlike states where development is concentrated in a single mega-city, Tamil Nadu has a robust network of tier-II and tier-III towns. This spread of economic activities across multiple urban centers has facilitated a more balanced and widespread urban growth pattern.

15. (B) Irulas - Traditionally associated with snake catching and forest produce
Irulas are a recognized tribal group in Tamil Nadu traditionally famous for their expertise in snake and rat catching. They also collect various forest produces for their livelihood. Badagas are primarily agriculturists, while the Malayali tribe consists of hill farmers rather than pastoralists. Paliyans are traditionally nomadic hunter-gatherers rather than large-scale agriculturalists in the hills.

16. (D) First fully digital census - 2011
The 2011 Census was not the first fully digital census; it involved extensive paper-based data collection. The upcoming census is planned to be the first digital one in India's history. The first synchronous census occurred in 1881, and 1921 is known as the year of the Great Demographic Divide due to the negative population growth recorded.

17. (A) Kancheepuram
The Chennai Metropolitan Area has undergone significant expansion to manage urban growth effectively. This expansion integrates parts of the neighboring districts, specifically Kancheepuram and Tiruvallur, into the metropolitan planning zone. Districts like Tirunelveli, Madurai, and Coimbatore are located far from Chennai in the southern and western parts of Tamil Nadu and are not part of CMA.

18. (C) Austro-Asiatic
Santhali, Mundari, and Ho are major languages belonging to the Munda branch of the Austro-Asiatic language family. These languages are primarily spoken by tribal communities residing in the Chota Nagpur plateau region, covering states like Jharkhand, Odisha, and West Bengal. They represent one of the ancient linguistic layers present within the diverse Indian subcontinent.

19. (A) They are exclusively hunter-gatherers with no agricultural practices.
The Malayali tribe is the largest Scheduled Tribe group in Tamil Nadu, primarily inhabiting the eastern hills like Shevaroy and Kolli Hills. Contrary to being exclusively hunter-gatherers,

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knowledge of honey collection and medicinal herbs. They consist of several sub-groups like the Alu Kurumbas and Jenu Kurumbas, each having specific traditional occupations and cultural practices within the forest ecosystem.

40. (A) Strain on the healthcare system and geriatric care infrastructure
An increase in the dependency ratio in Tamil Nadu, driven by an ageing population, means a larger share of elderly people relative to the working-age group. This trend will place immense pressure on the state's healthcare system and necessitate significant investments in geriatric care infrastructure. It requires a shift in public policy to address the needs of senior citizens.

41. (D) Only III
The Negroid race is considered one of the earliest to inhabit India, with tribes in the Andaman Islands being primary examples. Mongoloid features are common in the Northeast. However, the Caucasoid race is not absent; it is one of the major racial components found in the Indian population, particularly in the northern and western regions of the country.

42. (B) 14
When the Indian Constitution was originally enacted in 1950, the Eighth Schedule recognized fourteen languages. These were Assamese, Bengali, Gujarati, Hindi, Kannada, Kashmiri, Malayalam, Marathi, Oriya, Punjabi, Sanskrit, Tamil, Telugu, and Urdu. Over the years, several amendments were passed to include more languages, bringing the current total to twenty-two.

43. (A) I, II and IV
Interstate migration is largely driven by economic factors and employment searches. Maharashtra and Delhi remain the top destination hubs for migrants. Uttar Pradesh and Bihar are the leading source states for outbound migration. Statement three is incorrect because, statistically, intrastate migration is much more frequent than interstate migration, though it involves shorter distances.

44. (C) An urban area providing core infrastructure and high quality of life through smart solutions
The Smart Cities Mission defines a smart city as an urban area that provides core infrastructure and a decent quality of life to its citizens. It involves a clean and sustainable environment and the application of 'smart' solutions for various urban services. The goal is to drive economic growth and improve the quality of life through local development.

45. (A) I, II, III and V
Article 342 empowers the President to specify Scheduled Tribes. The Bhils are currently the largest tribal group in India. States like Punjab and Haryana have no notified Scheduled Tribes. The Gonds are widely spread across central India. Statement four is incorrect as Indian tribes are incredibly diverse and speak languages from several different linguistic families.

46. (A) Both A and R are true and R is the correct explanation of A.
The Kotas of the Nilgiris historically functioned as the artisan community within a symbiotic social network. They provided essential services such as pottery, woodworking, and blacksmithing to the pastoral Todas and agricultural Badagas. In return, they received dairy products and grain. This traditional barter system defined the inter-tribal relationships and economic structure of the Nilgiri plateau.

47. (C) A is true but R is false.
India's decadal population growth rate has indeed shown a declining trend since 1981, indicating a slowdown in the pace of growth. However, this is due to a decline in birth rates resulting from family planning, not a drastic increase in death rates. Death rates have actually decreased over time due to improvements in medical facilities and public health.

48. (A) P-III, Q-IV, R-II, S-I
Telugu is the principal language of Andhra Pradesh. Kannada is the official and most spoken language in Karnataka. Malayalam is primarily spoken in Kerala. Kurukh, though a Dravidian language, is spoken by the Oraon tribe located in central India, particularly in the state of Jharkhand. This illustrates the wide geographical spread of the Dravidian language family.

49. (A) P-II, Q-IV, R-I, S-III
Population distribution refers to how people are spread across a given land area. Age structure

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states specifically for the purpose of promoting the welfare of the Scheduled Tribes.

30. (C) Telugu is spoken by a significant minority population in Tamil Nadu.
Telugu speakers constitute the largest linguistic minority group in Tamil Nadu, followed by Kannada and Urdu speakers. These populations are concentrated in districts bordering neighboring states and in major urban centers. Contrary to other options, linguistic minorities enjoy constitutional rights under Articles 29 and 30 to establish and administer educational institutions to preserve their heritage.

31. (A) Tamil, Sanskrit, Telugu, Kannada
Tamil was the first language declared classical in 2004. Sanskrit followed in 2005. Both Telugu and Kannada were accorded the status of Classical languages in the year 2008. This chronological sequence marks the recognition of the high antiquity and rich literary heritage of these ancient Indian languages by the central government of India.

32. (D) English
The Eighth Schedule of the Indian Constitution lists twenty-two official languages. While English is used for many official purposes and in the higher judiciary, it is not included in this specific schedule. Dogri, Santhali, and Maithili were added later through the 92nd Amendment Act of 2003, reflecting the linguistic diversity of the nation.

33. (A) Chennai, Kanniyakumari, Tiruvallur, Kancheepuram
Chennai is the most densely populated district in Tamil Nadu due to its status as a metropolitan hub. As per the 2011 Census, it is followed by Kanniyakumari, which has high density despite being rural in parts. Tiruvallur and Kancheepuram follow next, largely due to their proximity to Chennai and significant industrial and residential growth.

34. (C) Nomadic hunter-gatherers historically dwelling in the Palani Hills
The Paliyans are an indigenous tribal group traditionally inhabiting the Palani Hills of the Western Ghats. Their historical lifestyle was characterized by nomadic hunting and gathering, relying on the forest for food and medicinal plants. They lived in small groups and had minimal contact with the plains people until more recent periods of social integration.

35. (A) Kotas - Nilgiri Hills
The Kotas are one of the ancient tribal communities inhabiting the Nilgiri Hills of Tamil Nadu. They were traditionally known as the artisan tribe of the region. The Malayali tribe is associated with the Eastern Ghats like Shevaroy Hills. Paliyans are found in the Palani Hills, and the Badagas are another major group residing in the Nilgiris.

36. (D) Decadal Growth Rate - Population growth measured over a 15-year period
The Decadal Growth Rate refers to the percentage variation in population over a ten-year period, not fifteen years. Sex ratio is indeed the number of females per 1,000 males. Literacy rate is calculated for the population aged seven and above. An urban agglomeration represents a continuous urban spread including a town and its adjoining outgrowths.

37. (B) Rajasthan
Rajasthan has historically recorded one of the highest gaps between male and female literacy rates in India. According to the 2011 Census, while male literacy was around 79%, female literacy lagged significantly behind at approximately 52%. This disparity highlights the socio-cultural challenges and the need for targeted educational interventions for women in the state.

38. (C) India's sex ratio is 943, while Tamil Nadu's is 996.
As per the 2011 Census data, India's national average sex ratio stands at 943 females per 1,000 males. Tamil Nadu performs significantly better than the national average, recording a sex ratio of 996. This indicates a more balanced gender distribution in the state, which is often attributed to better social development and women-centric policies.

39. (D) They are the only tribe in Tamil Nadu classified as Indo-Aryan speakers.
The Kurumbas are a tribal group in the Nilgiris and are speakers of Dravidian languages, not Indo-Aryan. They are well-known for their traditional

they are primarily settled agriculturists who cultivate crops like ragi and various fruits. Their name literally signifies "people of the hills," reflecting their traditional geographical habitat in the state.

20. (D) High birth rate and high death rate
A population pyramid with a very broad base indicates a high birth rate, as a large portion of the population is young. A sharply tapering top suggests that fewer people survive into old age, which is a characteristic of high death rates. This shape is typical of less developed societies undergoing the early stages of demographic transition.

21. (B) I and III
Tamil was the first language in India to be accorded Classical status in 2004. It belongs to the Dravidian language family, not the Indo-Aryan family. There is indeed a vast global Tamil diaspora, with significant populations living in countries such as Sri Lanka, Malaysia, and Singapore, where the language holds cultural and official importance.

22. (C) Scheduled Tribes
The Eklavya Model Residential Schools scheme is a flagship initiative of the Ministry of Tribal Affairs. Its primary goal is to provide quality middle and high-level education to Scheduled Tribe students in remote areas. These schools aim to enable tribal students to access the best opportunities in education and integrate with the national mainstream development process.

23. (A) I, II and IV
Tamil Nadu has successfully reduced its Total Fertility Rate below the replacement level, leading to an ageing population. Consequently, the state is seeing a shrinking demographic dividend and an expected rise in the dependency ratio. Statement three is incorrect because Tamil Nadu has one of the lowest proportions of the young population compared to northern states.

24. (A) Article 350B
Article 350B was inserted into the Constitution by the 7th Amendment Act of 1956. It provides for a Special Officer for Linguistic Minorities, appointed by the President. This officer's duty is to investigate all matters relating to the safeguards provided for linguistic minorities and report to the President, ensuring their rights and interests are protected.

25. (A) I, II, III and V
The demographic transition model describes the transformation of countries from high birth and death rates to low rates. India has moved past the first stage and is currently in the late second or early third stage, characterized by declining fertility. The final stage involves low birth and death rates, leading to a stable or even declining population.

26. (A) Both A and R are true and R is the correct explanation of A.
Internal migration in India is numerically dominated by rural-to-rural movement. The primary reason for this trend is female migration occurring due to marriage, as women move from one village to another. While economic migration often targets urban areas, marriage-related migration remains the largest component of total internal movement within the rural sectors of the country.

27. (C) A is true but R is false.
The Badagas are indeed the largest indigenous social group in the Nilgiris district of Tamil Nadu. They have a distinct culture and language, though they are not currently classified as a Scheduled Tribe. There is no such record of them being the first tribal group to receive a UNESCO heritage status specifically for their dialect as described.

28. (A) P-II, Q-IV, R-I, S-III
The Jarawa tribe is one of the most famous PVTGs residing in the Andaman and Nicobar Islands. Sahariya is a primitive tribe found primarily in Madhya Pradesh and Rajasthan. Bonda is a PVTG known for its unique culture in Odisha. The Cholanaikkan tribe is one of the most isolated groups and is found deep within the forests of Kerala.

29. (A) P-IV, Q-I, R-II, S-III
Van Dhan Yojana focuses on value addition and branding of tribal products to improve income. EMRS provides quality residential education to Scheduled Tribe students. TRIFED is responsible for the marketing of minor forest produce. Article 275(1) provides constitutional grants to

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describes the proportion of individuals in different age cohorts. Sex composition is the ratio between the number of males and females in a population. Literacy rate focuses on the level of educational attainment, specifically the ability of individuals to read and write.

50. (C) Registrar General and Census Commissioner's office under Ministry of Home Affairs
The Census of India is conducted decennially. The office of the Registrar General and Census Commissioner, which is responsible for conducting the census, falls under the Ministry of Home Affairs. The first synchronous census was held in 1881 under Lord Ripon, and the current legal framework is provided by the Census Act of 1948, not 1935.

51. (A) Chennai, Kancheepuram, Vellore, Coimbatore
According to the 2011 Census, Chennai was the most populous district in Tamil Nadu. It was followed by Kancheepuram, which has seen rapid growth due to urban expansion. Vellore and Coimbatore followed as the third and fourth most populous districts, respectively. These rankings reflect the major urban and industrial concentrations within the state of Tamil Nadu.

52. (D) Santhals
Irulas, Todas, and Paliyans are all indigenous tribal groups recognized and notified as Scheduled Tribes in the state of Tamil Nadu. In contrast, the Santhals are a major tribal group primarily residing in the eastern states of India, such as Jharkhand, West Bengal, and Odisha. They are not a native or recognized tribal community in Tamil Nadu.

53. (A) Haryana, Uttar Pradesh, West Bengal, Kerala
In the 2011 Census, Haryana recorded a very low sex ratio of 879. Uttar Pradesh followed with 912, and West Bengal with 950. Kerala stands at the top with a sex ratio of 1084, being the only major state where females outnumber males. This order represents the range from the lowest to the highest sex ratios among these states.

54. (C) Pension and geriatric healthcare systems
When a country experiences a rapid decline in the young population and a rise in the elderly, it signifies an ageing society. In such a demographic scenario, the government must prioritize the creation of robust pension schemes and specialized geriatric healthcare systems. These interventions are necessary to support the increasing number of dependents who are no longer in the workforce.

55. (D) Khasi - Austro-Asiatic
Khasi is an Austro-Asiatic language spoken predominantly in the state of Meghalaya. Bodo belongs to the Tibeto-Burman family, not Dravidian. Kashmiri is an Indo-Aryan language, specifically of the Dardic branch. Tulu is a Dravidian language spoken in coastal Karnataka and Kerala. These classifications help in understanding the complex linguistic map and historical migrations in India.

56. (A) Badagas - Nomadic sea-faring navigators
Badagas are an indigenous community in the Nilgiris primarily involved in agriculture, especially tea and potato cultivation. They are not sea-faring or nomadic. Todas are indeed known for their unique barrel-shaped huts called 'dogles'. Kotas are traditional artisans and musicians. Irulas are famous for their snake-catching skills, which have gained international recognition for venom collection.

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57. (B) Value addition of Minor Forest Produce (MFP)
The Van Dhan Yojana is a market-linked tribal development scheme that aims to improve the livelihoods of tribal gatherers. It focuses on the value addition, branding, and marketing of Minor Forest Produce through the establishment of Van Dhan Vikas Kendras. By processing raw forest goods locally, the scheme ensures that tribals receive a higher share of the final price.

58. (B) Tibeto-Burman
The Tibeto-Burman language family is primarily concentrated in the Himalayan and Sub-Himalayan regions of India. It includes languages spoken in Ladakh, Himachal Pradesh, Uttarakhand, and throughout the Northeastern states. This group reflects the historical and cultural links between these mountain regions and the neighboring Tibetan and Southeast Asian linguistic areas.

ANSWERS

1. (A) I and II
Telugu is the most spoken Dravidian language in India numerically. Brahui is unique as a Dravidian language spoken primarily in Pakistan, outside the Indian borders. While Malayalam is a major Dravidian language, Tamil is historically considered the oldest and has the most ancient literary tradition within this specific language family group.

2. (C) 382 persons per sq km
Population density represents the average number of persons residing per square kilometer of land area. As per the final data released for the 2011 Census, India's population density increased from 324 in the 2001 Census to 382. This metric helps in understanding the spatial distribution and concentration of people.

3. (C) I and III
The Todas and Kotas are among the six Particularly Vulnerable Tribal Groups identified in Tamil Nadu, primarily residing in the Nilgiris district. Irulas are found in many districts but are not primarily coastal plains dwellers. Kurumbas are forest-based honey gatherers and artisans rather than being known as traditional deep-sea fisherfolk.

4. (D) Economic growth potential from shifts in population age structure
Demographic dividend describes the economic growth potential that results from shifts in a population's age structure. This occurs when the share of the working-age population is larger than the non-working-age share of the population. It provides a window of opportunity for rapid industrial development and increased national productivity if supported by education.

5. (C) II and V
Currently, there are eleven recognized Classical languages in India, not six as previously listed. A primary criterion for classical status is that the language's literary tradition must be original and not borrowed from another speech community. Statement two is incorrect due to the count, and statement five contradicts the requirement for originality.

6. (A) Both A and R are true and R is the correct explanation of A.
Tamil Nadu consistently maintains a sex ratio higher than the national average due to progressive social policies. Effective implementation of various women's welfare schemes and improved healthcare access has significantly contributed to this trend. Socio-economic development in the state supports gender equality, leading to better demographic outcomes regarding the female-to-male population ratio.

7. (C) A is true but R is false.
The Todas are a pastoral tribe in the Nilgiris who hold the water buffalo in high sacred and economic regard. Their entire social and religious life revolves around dairy rituals and buffalo care. However, they are not involved in shifting agriculture in the lower plains, as they traditionally reside in the high-altitude plateau.

8. (A) P-IV, Q-III, R-II, S-I
The Bhils are a major tribal group primarily concentrated in the western states, particularly Rajasthan. Santhals are the largest tribal community in Jharkhand and surrounding eastern regions. The Garo tribe is indigenous to the state of Meghalaya in Northeast India. Chenchus are a hunting and gathering tribe residing mainly in the state of Andhra Pradesh.

9. (A) P-IV, Q-I, R-II, S-III
The Munda languages belong to the Austro-Asiatic family found in central India. Bodo is a significant language belonging to the Tibeto-Burman family, spoken mostly in Assam. Marathi is an Indo-Aryan language predominant in western India. Kurukh is a North Dravidian language spoken by the Oraon tribe, primarily residing in the state of Jharkhand.

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growth is the surplus of births over deaths in a given population within a specific time frame.

69. (B) P-I, Q-II, R-III, S-IV
Tamil was the first language granted Classical status in 2004. Sanskrit followed in 2005. Telugu received the recognition in 2008 along with Kannada. Odia was added to the list of Classical languages more recently in 2014. These years reflect the progressive recognition of India's ancient linguistic heritage by the Ministry of Culture and the central government.

70. (C) It is planned to be the first digital census in the history of India.
The government has planned the next census of India to be the first digital census in the country's history. This will involve data collection through mobile applications and a self-enumeration portal. Although delayed from its original schedule, this digital approach aims to speed up data processing and improve the accuracy of the demographic information collected across the nation.

71. (A) 1961-1971, 1981-1991, 2001-2011
India's population growth rate peaked during the 1961-1971 decade at about 24.8%. Since then, it has been on a gradual decline. The growth rate for 1981-1991 was approximately 23.87%, and it dropped significantly to about 17.7% during the 2001-2011 period. This descending order reflects the successful impact of family planning and socio-economic improvements over the decades.

72. (A) Being the official language of at least five states in modern India
Being an official language of multiple states is not a criterion for Classical status. The actual criteria include a high antiquity of over 1,500 to 2,000 years, a body of ancient literature considered a valuable heritage, and an original literary tradition. The status focuses on the historical and literary depth of the language rather than its modern administrative use.

73. (A) Madhya Pradesh, Maharashtra, Odisha, Rajasthan
According to the 2011 Census, Madhya Pradesh has the largest total population of Scheduled Tribes in India. It is followed by Maharashtra, Odisha, and Rajasthan. These four states together account for a significant portion of the country's tribal population. Their distribution is largely linked to the hilly and forested terrains of central and western India.

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74. (B) Employment and better economic opportunities
In India, male migration from rural to urban areas is primarily driven by "pull factors" like employment opportunities and better wages in cities. Rural areas often face challenges like seasonal unemployment and lack of industrial growth, pushing men toward urban centers. Unlike female migration, which is mostly social, male movement is predominantly motivated by the need for livelihood.

75. (A) Tribal Sub-Plan (TSP) - Channels funds proportional to the tribal population for their development
The Tribal Sub-Plan is a strategy designed to ensure that a portion of the total plan outlay of a state or center is earmarked for tribal development in proportion to their population. TAHDCO focuses on the economic upliftment of Scheduled Castes and Tribes, not just urban housing. EMRS provides school-level education, while the TSP remains a fundamental funding mechanism.

76. (C) Australoid - Racial group found exclusively in the Himalayas and absent in the South
The Australoid or Proto-Australoid group is not absent in South India; in fact, many indigenous tribal groups in the southern states exhibit these racial characteristics. Negroids are associated with the Andamanese tribes. Mongoloids are found in the North and Northeast. Caucasoids are a major component of the Indian population, particularly in the northern and western regions.

77. (D) Sri Lanka, Malaysia, Singapore, and South Africa
The Global Tamil Diaspora is one of the most significant Indian diasporic groups, spread across several continents. Major concentrations are found in Sri Lanka, Malaysia, and Singapore due to historical proximity and colonial-era migrations. There are also significant Tamil-origin populations in South Africa, Mauritius, and several Western countries, maintaining strong cultural ties to their ancestral land.

78. (C) India shows a wide youth base, while Japan displays a narrow base due to an ageing population
India's population pyramid has a wide base, indicating a large young population and high birth rates. In contrast, Japan's pyramid has a very narrow base and a wide top, representing a shrinking birth rate and a large elderly population. This highlights Japan's challenge with an ageing society compared to India's opportunity to utilize its vast demographic dividend.

79. (B) Hindi is the official language of the state government alongside Tamil.
Tamil is the sole official language of the Tamil Nadu state government. Hindi is not used as an official language in the state's administration. Tamil is spoken by the majority, followed by Telugu as the second largest group. Sourashtra is a significant minority language spoken by a community that migrated from Gujarat centuries ago, settling primarily in Madurai.

80. (D) Family planning and socio-economic growth have begun to successfully lower fertility rates
The decline in the decadal growth rate from 21.5% to 17.7% between 2001 and 2011 is a positive demographic signal. It strongly suggests that fertility rates are falling due to the effective implementation of family planning programs. Additionally, improved literacy and socio-economic growth have encouraged smaller family sizes, leading to a more manageable population growth trajectory for India.

81. (C) Only I
The first non-synchronous census was indeed conducted in 1872 under Lord Mayo. Census operations have historically been resilient and are not strictly halted by wars. Furthermore, the demographic data collected is absolutely vital for economic planning, resource allocation, and the formulation of social welfare policies by the government. Thus, only the first statement is factually correct.

82. (C) 75
In India, there are 75 tribal groups officially recognized as Particularly Vulnerable Tribal Groups. These groups are identified based on criteria such as a stagnant or declining population, low literacy levels, and a pre-agricultural level of technology. They reside across 18 states and one Union Territory, receiving specialized attention through various central and state government schemes.

83. (D) I, II, III and IV
The 92nd Constitutional Amendment Act of 2003 was a landmark linguistic update. It added four languages—Bodo, Dogri, Maithili, and Santhali—to the Eighth Schedule of the Constitution. This inclusion brought the total number of languages in the schedule to twenty-two, providing these languages with constitutional recognition and support for their promotion and development in India.

84. (D) 1881
The first synchronous census, meaning it was conducted simultaneously across the entire country, took place in 1881. This massive operation was carried out under the tenure of Lord Ripon. Since then, the census has been conducted every ten years without interruption until the delay caused by the recent pandemic. It remains the most comprehensive source of demographic data in India.

85. (C) I, II, III, V
Article 366 (25) defines Scheduled Tribes as those notified under Article 342. The President specifies them after consulting governors, and Parliament can modify the list. The Fifth and Sixth Schedules provide for tribal area administration. Statement four is incorrect because Scheduled Tribes can include various communities, not just those living in forests, based on their specific characteristics.

86. (A) Both A and R are true and R is the correct explanation of A.
Tamil Nadu is experiencing a demographic shift where the elderly population is growing faster than other age groups. This is a direct consequence of the state's success in healthcare, which has increased life expectancy, and family planning, which has significantly lowered the birth rate. Consequently, planners must now address the economic and social needs of a larger senior citizen demographic.

87. (D) A is false but R is true.
The Dravidian linguistic group is not confined solely to South India. While most Dravidian

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speakers live in the south, languages belonging to this family are spoken elsewhere. For example, Kurukh is spoken in Jharkhand and Chhattisgarh, while Brahui is a Dravidian language spoken far away in Pakistan's Balochistan province. Therefore, the assertion is false while the reason is factually correct.

88. (A) P-III, Q-II, R-I, S-IV
The Todas are a pastoral community famous for their presence in the high-altitude Nilgiri Hills. Paliyans are traditionally nomadic hunter-gatherers found in the Palani Hills of the Western Ghats. The Malayali tribe, the largest ST group in the state, inhabits the Shevaroy Hills. Kanikkar tribes are found in the Agasthyamalai Hills in the southernmost part of the state.

89. (A) P-II, Q-I, R-IV, S-III
Rural-to-rural migration in India is dominated by females moving due to marriage. Rural-to-urban migration is primarily driven by males seeking employment. Urban-to-urban movement involves professionals moving between cities for better career prospects. Urban-to-rural migration is often a "reverse" stream seen during economic crises or following retirement when people return to their native villages.

90. (B) The death of Potti Sriramulu expedited the creation of Andhra state, the first linguistic state.
The creation of Andhra State in 1953 as the first linguistic state was expedited by the death of Potti Sriramulu following a 56-day hunger strike. The JVP Committee and the Fazl Ali Commission were cautious about linguistic states, though the latter eventually accepted language as a major basis for the 1956 reorganization. The States Reorganisation Act was passed in 1956, not 1947.

91. (A) Malayali, Irula, Kurumba, Toda
Among the Scheduled Tribes in Tamil Nadu, the Malayali tribe is the largest in terms of population. They are followed by the Irula tribe. The Kurumbas and Todas have much smaller populations, with the Todas being one of the smallest tribal communities in the state. This descending order represents the demographic distribution of indigenous groups within Tamil Nadu.

92. (C) Natural disasters and unemployment
Pull factors are positive attributes of a destination that attract people, such as better jobs, higher wages, and superior healthcare. In contrast, natural disasters and unemployment are "push factors." These are negative conditions in the place of origin that force people to migrate elsewhere. Understanding the difference between push and pull factors is key to analyzing migration patterns.

93. (A) Goa, Mizoram, Tamil Nadu, Kerala
As per the 2011 Census, Goa is the most urbanised state with over 62% urban population. Mizoram follows with about 52%, being a highly urbanised state in the Northeast. Tamil Nadu ranks third with 48.4%, and Kerala follows with approximately 47.7%. This order represents the states with the highest proportion of their residents living in urban areas in India.

94. (C) Working-age populations face heavier burdens supporting non-working age groups
A high dependency ratio indicates that there is a large number of children and elderly people compared to the number of people in the working-age group. This places a significant economic and social burden on the productive workforce, as they must support a larger non-working population. It can lead to lower savings rates and increased government spending on social security.

95. (B) Meghalaya - Khasi
Khasi is the majority language spoken in the state of Meghalaya, alongside Garo. Nagaland's majority languages are various Naga dialects, while Meitei is the main language of Manipur. Tripura's main languages include Bengali and Kokborok, not Bodo. Sikkim is known for Nepali, Bhutia, and Lepcha, while Santhali is primarily spoken in the eastern states like Jharkhand and West Bengal.

96. (D) Kotas - Deep-sea fishing
The Kotas of the Nilgiris are traditionally artisans, potters, and musicians, not deep-sea fishers. Todas are famous for buffalo pastoralism. Irulas are well-known for their expertise in catching snakes and rats. Kurumbas have a long tradition of gathering honey and other forest produce. These traditional occupations are closely linked

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115. (A) Badagas - Primarily agriculturalists closely linked to tea plantations
The Badagas are the largest indigenous group in the Nilgiris and are predominantly agriculturalists, famous for tea and vegetable farming. Kotas are traditional artisans, not hunter-gatherers. Todas are pastoralists who rear buffaloes, not fishers. Kurumbas are traditionally forest dwellers involved in honey collection rather than being urban merchants. These roles define the historical social structure of the Nilgiri plateau.

116. (D) Article 343 - Declares Tamil as the sole official language of India
Article 343 of the Indian Constitution declares Hindi in Devanagari script as the official language of the Union, not Tamil. Article 29 protects the interests of minorities, while Article 30 grants them the right to establish educational institutions. Article 350A mandates that states provide facilities for instruction in the mother tongue at the primary level for linguistic minority groups.

117. (B) 1988
The Tamil Nadu Adi Dravidar and Tribal Welfare Department was formally established as a separate entity in 1988. Its primary mission is to focus on the socio-economic development and welfare of the Scheduled Castes and Scheduled Tribes in the state. The department implements various schemes related to education, housing, and economic empowerment to improve the lives of these marginalized communities.

118. (C) Epicanthic fold of the eye
In historical racial classifications, the epicanthic fold of the eye was used as a primary distinguishing feature of the Mongoloid racial group. Other characteristics include yellowish skin, straight hair, and relatively flat facial features. These traits are predominantly found in the populations of the North and Northeast regions of India, reflecting ancestral links to the broader East Asian racial groups.

119. (D) Tibeto-Burman languages are natively spoken by the majority of the population in Kerala.
Tibeto-Burman languages are not spoken by the majority in Kerala; the majority there speaks Malayalam, which is a Dravidian language. Indo-Aryan languages are indeed the most spoken in India. Dravidian languages are concentrated in the south, while Austro-Asiatic languages are spoken by various tribal groups in the central and eastern parts of the country, such as the Santhals and Mundas.

120. (A) They possess high vulnerability and require specialized PVTG protection frameworks.
The extreme geographical isolation and traditional lifestyles of the Cholanaikkans in Kerala and Paliyans in Tamil Nadu make them highly vulnerable communities. Due to their pre-agricultural technology and very low literacy levels, they are classified as Particularly Vulnerable Tribal Groups. This status ensures they receive specialized government protection and development programs tailored to their unique needs and fragile forest ecosystems.

121. (A) I and II
The Paliyans are an indigenous group residing in the Palani Hills and other parts of the Western Ghats in Tamil Nadu. Historically, they lived as nomadic hunter-gatherers, relying on forest resources for their survival. Statement three is incorrect because they are not known for large-scale mechanized agriculture; instead, they have traditionally maintained a much simpler and more direct relationship with nature.

122. (B) Kerala
Kerala recorded the highest sex ratio among all Indian states in the 2011 Census, with 1,084 females per 1,000 males. This exceptional figure is attributed to the state's high literacy rates, superior healthcare systems, and historical social structures that favored women. Kerala remains a unique example in India where the female population outnumbers the male population significantly.

123. (B) I, III and IV
India is currently in the phase of its demographic dividend, which offers a chance for rapid economic growth due to a large working-age population. Skill development is essential to harness this potential. Statement two is incorrect because a demographic dividend occurs when the dependency ratio is at its lowest, not at its peak, indicating fewer dependents per worker.

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106. (A) Both A and R are true and R is the correct explanation of A.
Interstate migration in India is indeed dominated by males, while females migrate more frequently within state boundaries. This pattern occurs because men are more likely to move long distances across states in search of better economic opportunities and jobs. Female migration, on the other hand, is overwhelmingly social, primarily driven by marriage, which statistically occurs more often within the same state.

107. (A) Both A and R are true and R is the correct explanation of A.
Tamil Nadu has a narrower male-female literacy gap than many other Indian states. This achievement is the result of long-term social reform movements that emphasized equality. Furthermore, the state's pioneering mid-day meal scheme and other educational incentives have significantly improved school enrollment and retention rates for girls, leading to higher female literacy and a more equitable educational landscape.

108. (A) P-I, Q-II, R-III, S-IV
Sindhi was added to the Eighth Schedule by the 21st Amendment in 1967. Konkani, Manipuri, and Nepali were added by the 71st Amendment in 1992. Bodo, Dogri, Maithili, and Santhali were included via the 92nd Amendment in 2003. The original Constitution recognized 14 languages in 1950. This timeline shows the expanding linguistic recognition in India's official schedule.

109. (A) P-III, Q-II, R-I, S-IV
Kanniyakumari district recorded the highest literacy rate in Tamil Nadu in 2011. Dharmapuri had the lowest literacy rate. The Nilgiris district reported the highest sex ratio in the state, being a region with a more balanced gender distribution. Salem district recorded the lowest sex ratio, indicating a significant gender disparity in the population according to the 2011 Census data.

110. (C) Cities like Chennai, Coimbatore, and Madurai are part of the Smart Cities Mission to upgrade urban infrastructure.
Several major cities in Tamil Nadu, including Chennai, Coimbatore, and Madurai, were selected under the national Smart Cities Mission. The mission's goal is to upgrade urban infrastructure and provide better services through technology and sustainable planning. It does not aim to convert all villages into cities, nor are these cities exempt from state taxes or located outside the mission's scope.

111. (A) Tamil Nadu, Kerala, Karnataka, Andhra Pradesh
Among the South Indian states, Tamil Nadu is the most urbanised, followed closely by Kerala according to the 2011 Census. Karnataka ranks third in terms of the percentage of its population living in urban areas. Andhra Pradesh has the lowest urbanisation percentage among these four states. This order highlights the varying levels of industrial and urban development across southern India.

112. (D) Rajasthan
Bihar, West Bengal, and Kerala are all among the most densely populated states in India, each having a density well over 800 persons per square kilometer. Rajasthan, while large in area, has a much lower population density due to its vast desert regions and arid climate. Its density is significantly below the 800 mark, reflecting the impact of geography on population.

113. (A) Dharmapuri, Salem, Chennai, Nilgiris
Dharmapuri and Salem are among the districts in Tamil Nadu that recorded lower sex ratios in the 2011 Census. Chennai, being a metropolitan area, has a moderate sex ratio. The Nilgiris district stands at the higher end of the spectrum with a very favorable sex ratio. This ascending order reflects the regional variations in gender distribution within the state of Tamil Nadu.

114. (C) Imparting quality middle and high-level education to remote Scheduled Tribe students
The Eklavya Model Residential Schools are established to provide high-quality education to Scheduled Tribe students from remote and tribal areas. These schools focus not just on academic excellence but also on the overall development of the students, including sports and vocational skills. The aim is to ensure that tribal youth can compete for the best jobs and professional courses.

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to the specific environments in which these tribal groups reside.

97. (A) Malayali
The Shevaroy and Kolli Hills in the Eastern Ghats of Tamil Nadu are the primary habitats of the Malayali tribe. Despite their name, they are a Tamil-speaking tribal group and are the most populous Scheduled Tribe in the state. They are primarily hill farmers. Other groups like Paliyans and Badagas reside in the Western Ghats and Nilgiris, respectively.

98. (C) Marathi
Marathi is a major Indo-Aryan language spoken primarily in the state of Maharashtra. Manipuri belongs to the Tibeto-Burman family, while Telugu is a prominent Dravidian language. Munda belongs to the Austro-Asiatic language family. Indo-Aryan languages are the most widely spoken group in India, covering most of the northern, western, and eastern parts of the country.

99. (A) Hindi is heavily derived from Proto-Dravidian roots.
Hindi is an Indo-Aryan language and is not derived from Proto-Dravidian roots. It is the second largest language family in India after Indo-Aryan. The family is indeed categorized into South, Central, and North Dravidian subgroups based on linguistic characteristics and geographical spread. Gondi is a major Central Dravidian language spoken by the Gond tribe across central India.

100. (D) Extreme isolation from historical trade routes
The high population density in the Gangetic plains is primarily due to fertile alluvial soil, flat terrain for agriculture, and abundant water from perennial rivers. These factors make the region highly productive. Isolation from trade routes is incorrect because the Gangetic plains have historically been at the center of major trade and transport routes, further contributing to their high population concentration.

101. (A) I and II
The States Reorganisation Commission of 1953 was headed by Fazl Ali and included K.M. Panikkar and H.N. Kunzru. It recommended the reorganization of state boundaries based largely on language. Statement three is incorrect because, while the commission did not support "one language, one state" as a rigid rule, it did recognize language as a primary factor for reorganization.

102. (C) 943 females per 1000 males
The 2011 Census recorded the national sex ratio of India as 943 females per 1,000 males. This was a slight improvement from the 933 recorded in the 2001 Census. The sex ratio is a critical demographic indicator that reflects the status of women and gender balance in the country, with significant variations observed across different states and regions.

103. (B) II, III and IV
The Toda community is indeed known for its distinctive barrel-shaped huts. Tamil Nadu has 36 recognized Scheduled Tribes, most of whom reside in the hilly terrains of the Western and Eastern Ghats. Statement one is incorrect because the Badaga community, while indigenous to the Nilgiris, is not currently included in the official list of Scheduled Tribes for Tamil Nadu.

104. (A) Spatial study of population distribution, composition, migration, and growth relative to environment
Population Geography is the study of the spatial distribution, composition, migration, and growth of populations in relation to their geographical environment. It examines how human populations interact with and are influenced by the physical and socio-economic characteristics of different places. This field is essential for understanding demographic trends and planning for sustainable development across various regions and territories.

105. (C) Only II is incorrect
Life expectancy at birth in India has been steadily increasing, not decreasing, since 1951 due to improved healthcare. All other statements are correct: IMR measures infant deaths, high literacy usually leads to lower fertility, age structure is shown by population pyramids, and the working-age group is defined as 15-59 years. This reflects the overall demographic progress of the nation.

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124. (C) Scheduled Castes and Scheduled Tribes
The Tamil Nadu Adi Dravidar Housing and Development Corporation was established specifically for the economic upliftment of Scheduled Castes and Scheduled Tribes. It provides financial assistance, vocational training, and various loan schemes to help these communities start businesses and improve their living standards. It is a key agency for implementing welfare and developmental programs for marginalized groups in Tamil Nadu.

125. (C) I, II, III, V
The Chennai Metropolitan Area faces several urban challenges, including groundwater depletion, flooding due to encroachment on water bodies, and a shortage of affordable housing. Infrastructural issues like traffic and waste management are also critical. Statement four is incorrect because the population of the CMA is actually increasing rapidly due to urban migration, rather than decreasing through reverse migration.

126. (A) Both A and R are true and R is the correct explanation of A.
The 1956 linguistic reorganisation is widely regarded as a successful move that strengthened national unity. By creating states based on language, the government addressed the deep-seated linguistic aspirations of various regions. This accommodation reduced internal friction and prevented the possibility of movements for separation based on language grievances, thereby ensuring a more stable and integrated federal structure for India.

127. (C) A is true but R is false.
The Toda embroidery, known as 'Pukhoor', is a unique and world-renowned craft that has received Geographical Indication status. It is traditionally done by Toda women. However, the reason is false because the Todas are not an industrial workforce in Coimbatore; they are a small pastoral tribe residing in the Nilgiri Hills whose lifestyle is far removed from large-scale factory work.

128. (A) P-II, Q-I, R-IV, S-III
Population density is measured as the number of persons per square kilometer. The sex ratio is expressed as the number of females per 1,000 males. Infant Mortality Rate is calculated as the number of deaths of infants under one year per 1,000 live births. Literacy rate is the percentage of the population aged seven and above that can read and write.

129. (A) P-II, Q-I, R-IV, S-III
Tamil and Kannada both belong to the Dravidian language family. Sanskrit and Odia are classified as Indo-Aryan languages. These four are among the recognized Classical languages of India. This matching highlights that the prestigious status of a "Classical Language" is shared across different linguistic families in the country, reflecting a diverse and ancient literary heritage.

130. (C) 1921 is the 'Great Divide' because population growth was negative prior to this period
The year 1921 is known as the "Great Divide" because it was the only time in India's census history that the population showed a negative growth rate. Prior to 1921, growth was erratic and often negative. After 1921, the population began to grow steadily. Other statements are incorrect as the growth rate has been declining since 1981, not increasing continuously.

131. (A) Kanniyakumari, Chennai, Thoothukudi
According to the 2011 Census, Kanniyakumari recorded the highest literacy rate in Tamil Nadu at over 91%. Chennai followed as the second most literate district. Thoothukudi also showed high literacy levels, ranking among the top districts in the state. This descending order reflects the high educational standards achieved in the southern and metropolitan regions of Tamil Nadu.

132. (D) Mandatory conversion of tribal students to mainstream urban religions
The Eklavya Model Residential Schools are purely educational institutions aimed at the academic and personal development of tribal students. Their goals include preserving local culture and providing quality education and sports training. Mandatory religious conversion is not a goal and would be unconstitutional. The focus remains on empowering tribal youth while respecting and preserving their indigenous heritage and social identity.

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(E) Answer not known

6. Match the following terminologies in List I with their definitions in List II:
List I: (Terminology)
P. Hazard
Q. Vulnerability
R. Resilience
S. Risk
List II: (Definition)
I. The ability of a system to resist, absorb, and recover from the effects of a hazard
II. A process, phenomenon or human activity that may cause loss of life or property damage
III. The potential loss of life, injury, or destroyed assets determined probabilistically
IV. The conditions determined by physical, social, or economic factors which increase susceptibility
(A) P-II, Q-IV, R-I, S-III
(B) P-IV, Q-II, R-III, S-I
(C) P-II, Q-I, R-IV, S-III
(D) P-III, Q-IV, R-I, S-II
(E) Answer not known

7. Match the major earthquakes in India in List I with their respective years in List II:
List I: (Earthquake)
P. Bhuj
Q. Uttarkashi
R. Latur
S. Indian Ocean (Sumatra)
List II: (Year)
I. 1991
II. 1993
III. 2001
IV. 2004
(A) P-III, Q-I, R-II, S-IV
(B) P-I, Q-II, R-III, S-IV
(C) P-III, Q-II, R-I, S-IV
(D) P-IV, Q-III, R-II, S-I
(E) Answer not known

8. Which of the following is the correct sequence of regions representing increasing levels of seismic risk according to the Seismic Zonation of India?
(A) Zone II - Zone III - Zone IV - Zone V
(B) Zone I - Zone II - Zone III - Zone IV
(C) Zone V - Zone IV - Zone III - Zone II
(D) Zone II - Zone IV - Zone III - Zone V
(E) Answer not known

9. Consider the following major disasters in India:
I. Bhuj Earthquake
II. Latur Earthquake
III. Uttarkashi Earthquake
IV. Indian Ocean Tsunami
Which of the following is the correct chronological order from the earliest to the most recent?
(A) III, II, I, IV
(B) II, III, I, IV
(C) I, II, III, IV
(D) III, I, II, IV
(E) Answer not known

10. Which of the following pairs regarding seismic zones is correctly matched?
(A) Zone II - Very High Risk Zone
(B) Zone III - Low Damage Risk Zone
(C) Zone IV - High Damage Risk Zone
(D) Zone V - Moderate Damage Risk Zone
(E) Answer not known

11. Which of the following pairs regarding disaster terminology is incorrectly matched?
(A) Natural Calamity - A naturally occurring event causing significant damage
(B) Man-made Disaster - Industrial chemical leak
(C) Resilience - Ability to bounce back from a disaster
(D) Vulnerability - The physical force of a hazard
(E) Answer not known

12. According to international terminology, what is the exact definition of a 'Disaster'?
(A) A serious disruption of a community's functioning involving widespread losses
(B) Any localized natural phenomenon that significantly alters the landscape
(C) The probabilistic interaction between natural hazards and vulnerable assets
(D) The physical manifestation of intense events like earthquakes or cyclones
(E) Answer not known

13. The Mercalli scale is primarily used to measure which characteristic of an earthquake?
(A) The maximum amplitude recorded for the

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CHAPTER 10

Natural Calamities and Disaster Management

1. Consider the following statements regarding major earthquakes in India:
I. The Bhuj earthquake occurred in the year 2001.
II. The Latur earthquake in Maharashtra occurred in 1993.
III. The Uttarkashi earthquake occurred in 1999.
Which of the above statements is/are correct?
(A) II and III
(B) I only
(C) III only
(D) I and II
(E) Answer not known

2. Consider the following statements about Seismic Zones in India:
I. Zone V is the highest risk zone for earthquakes in India.
II. The entire state of Tamil Nadu falls exclusively under Zone IV.
III. India is divided into four seismic zones: Zone II, III, IV, and V.
IV. Zone II is classified as a low-damage risk zone.
Which of the above statements are correct?
(A) I, II and III
(B) I and IV
(C) I, III and IV
(D) II and III
(E) Answer not known

3. Consider the following statements regarding the Sendai Framework:
I. It spans the period from 2015 to 2030.
II. It succeeded the Hyogo Framework for Action.
III. It is a legally binding international treaty on disaster risk reduction.
IV. India is a signatory to this framework.
V. It focuses on shifting from disaster management to disaster risk management.
Which of the above statements is the correct combination?
(A) I, II, III and IV
(B) I, II, IV and V
(C) I, II and IV
(D) III, IV and V
(E) Answer not known

4. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option.
Assertion (A): The Richter scale measures the magnitude of an earthquake by assessing the energy released at the source.
Reason (R): The Mercalli scale is used to measure the intensity of an earthquake based on observed effects and damage.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

5. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option.
Assertion (A): A natural hazard will always result in a disaster regardless of the affected area's condition.
Reason (R): A disaster occurs only when a hazard intersects with a vulnerable population that has limited capacity to cope.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

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(D) III only
(E) Answer not known

22. Consider the following statements regarding the 2004 Indian Ocean Tsunami:
I. It was triggered by an earthquake off the coast of Sumatra.
II. Tamil Nadu's Nagapattinam district was severely affected.
III. It led to the establishment of the Indian Tsunami Early Warning System.
IV. The tsunami waves travelled only locally near the earthquake epicenter.
Which of the above statements are correct?
(A) I, III and IV
(B) I and II
(C) I, II and III
(D) III and IV
(E) Answer not known

23. Consider the following statements regarding Tsunamis:
I. Tsunamis are generated by sudden displacements of the ocean floor.
II. In the deep ocean, tsunami waves have very long wavelengths.
III. As tsunami waves approach shallow coastal waters, their speed increases.
IV. As tsunami waves approach the coast, their wave height increases drastically.
V. The Pacific Ring of Fire is highly vulnerable to tsunamis.
Which of the above statements is the correct combination?
(A) I, II, IV and V
(B) I, III, IV and V
(C) I, II and IV
(D) II, III and V
(E) Answer not known

24. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option.
Assertion (A): The Pacific Ring of Fire is the most seismically and volcanically active zone in the world.
Reason (R): It is characterized by frequent tectonic plate subduction around the margins of the Pacific Ocean.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

25. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option.
Assertion (A): Tsunami waves are highly noticeable and dangerous to ships in the deep open ocean.
Reason (R): Tsunami waves in the deep ocean have a very low amplitude but travel at very high speeds.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

26. Match the following elements of Tsunami preparedness in List I with their functions in List II:
List I: (Element)
P. Bottom Pressure Recorders
Q. Seismometers
R. Coastal Buffer Zones
S. Early Warning Systems
List II: (Function)
I. Measure earthquakes that may trigger tsunamis
II. Detect changes in water pressure on the ocean floor
III. Disseminate alerts to coastal communities
IV. Natural barriers like mangroves reducing wave impact
(A) P-II, Q-I, R-IV, S-III
(B) P-I, Q-II, R-III, S-IV
(C) P-III, Q-IV, R-I, S-II
(D) P-II, Q-IV, R-I, S-III
(E) Answer not known

27. Match the major disasters in List I with their primary region of impact in Tamil Nadu in List II:
List I: (Disaster)
P. 2004 Tsunami
Q. 2015 Floods

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largest seismic wave
(B) Intensity based on perceived shaking and structural damage
(C) The total energy released at the focus during the rupture
(D) The exact depth of the earthquake focus below the surface
(E) Answer not known

14. In which year was the Sendai Framework for Disaster Risk Reduction adopted?
(A) 2005
(B) 2015
(C) 2020
(D) 1994
(E) Answer not known

15. Identify the correct statement regarding the relationship between hazard, vulnerability, and risk.
(A) Disaster risk results from hazard, vulnerability, and exposure.
(B) Risk is independent of vulnerability and depends only on hazard.
(C) A hazard always translates into risk regardless of local capacity.
(D) Vulnerability is an unavoidable phenomenon that cannot be reduced.
(E) Answer not known

16. Identify the incorrect statement regarding the seismic zones of India.
(A) India's landmass is divided into four seismic zones.
(B) Zone V includes the entire northeastern region of India.
(C) Zone I represents regions with the highest earthquake vulnerability.
(D) Parts of the Himalayan region fall under Zone IV and V.
(E) Answer not known

17. Which of the following is an exception to the natural calamities classified under geological hazards?
(A) Earthquakes
(B) Tsunamis
(C) Volcanoes
(D) Tropical Cyclones
(E) Answer not known

18. What is the most appropriate action required to fulfill India's commitment to the Sendai Framework?
(A) Focusing exclusively on post-disaster relief funds for compensation
(B) Establishing military bases in all high-risk disaster-prone areas
(C) Transitioning from reactive management to proactive risk reduction
(D) Abandoning the established National Disaster Management Plan entirely
(E) Answer not known

19. If a highly populated coastal city with poor drainage infrastructure experiences heavy rainfall, which of the following best describes its condition in disaster management terms?
(A) Low exposure levels combined with high community resilience
(B) High vulnerability levels and high overall disaster risk
(C) High hazard occurrence but relatively low social vulnerability
(D) Low hazard occurrence but relatively high social vulnerability
(E) Answer not known

20. Which feature distinguishes a natural calamity from a man-made disaster?
(A) The total extent of financial loss incurred by the local government
(B) The specific requirement for immediate state or federal intervention
(C) The total number of human casualties recorded during the event
(D) A primary triggering mechanism rooted in natural earth processes
(E) Answer not known

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21. Consider the following statements about volcanoes in India:
I. Barren Island is the only confirmed active volcano in India.
II. Barren Island is located in the Andaman Sea.
III. The Deccan Traps were formed by explosive volcanic eruptions in the recent past.
Which of the above statements is/are correct?
(A) I and II
(B) II and III
(C) I only

133. (A) Arunachal Pradesh, Mizoram, Sikkim, Nagaland
Arunachal Pradesh has the lowest population density in India, with only 17 persons per square kilometer as per the 2011 Census. It is followed in ascending order by Mizoram, Sikkim, and Nagaland. These states, all located in the hilly Northeastern region, have low densities due to their difficult terrain, vast forest cover, and relatively smaller total populations.

134. (C) Stable with low birth and death rates
A bell-shaped population pyramid signifies a population that is stable. The birth and death rates are nearly equal and relatively low, resulting in a population that is neither expanding nor shrinking rapidly. This shape indicates that a high proportion of people survive into older age, a characteristic of developed societies that have completed the demographic transition to a modern state.

135. (D) Article 330 - Reservation of seats for SCs and STs in the Lok Sabha
Article 330 provides for the reservation of seats for Scheduled Castes and Scheduled Tribes in the Lok Sabha. Article 341 and 342 deal with the identification of Scheduled Castes and Scheduled Tribes, respectively. Article 17 abolishes untouchability and is not related to linguistic minorities. These constitutional provisions are essential for ensuring political representation and social justice for marginalized communities in India.

136. (A) Chenchus - Punjab
Chenchus are a tribal group residing primarily in the state of Andhra Pradesh, specifically in the Nallamala Hills, and not in Punjab. Lepchas are indigenous to Sikkim. Gaddis are a well-known pastoral tribe in Himachal Pradesh. Jarawas are one of the indigenous groups living in the Andaman Islands. This error highlights the importance of mapping tribal groups to their correct geographical regions.

137. (B) 68.84%
According to the 2011 Census, approximately 68.84% of India's total population resided in rural areas. This indicates that while urbanization is increasing, India remains a predominantly rural country. The urban population accounted for the remaining 31.16%. These figures are crucial for government planning, particularly for rural development, agricultural policies, and the allocation of resources to villages.

138. (B) Gondi
Gondi is classified as a Central Dravidian language and is spoken by the Gond tribe across central India. Tamil and Kannada are South Dravidian languages. Kurukh is a North Dravidian language spoken primarily in Jharkhand. Understanding these subgroups within the Dravidian language family helps in tracing the historical movement and linguistic evolution of different communities across the Indian subcontinent.

139. (A) 'Total Fertility Rate' measures the number of children born per 1,000 men in a population.
The Total Fertility Rate (TFR) measures the average number of children that would be born to a woman over her lifetime, not to men. Fecundity is indeed the biological capacity to reproduce. Morbidity refers to the prevalence of disease in a population. Net migration rate is the difference between the number of people entering and leaving a specific area.

140. (C) Longitude of the region
The age structure of a population is determined by fertility rates, mortality rates, and migration patterns. These factors dictate the number of people in different age cohorts. Longitude, which is a geographical coordinate measuring east-west position, has no influence on the demographic characteristics or the age distribution of a population. It is a physical coordinate irrelevant to human population dynamics.

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R. Landslides
S. Forest Fires
List II: (Region)
I. Chennai and surrounding districts
II. Nilgiris and Kodaikanal
III. Coastal districts like Nagapattinam
IV. Anamalai hills
(A) P-III, Q-I, R-II, S-IV
(B) P-I, Q-III, R-II, S-IV
(C) P-III, Q-II, R-I, S-IV
(D) P-II, Q-I, R-IV, S-III
(E) Answer not known

28. Which of the following is the correct sequence of tsunami wave progression from origin to landfall?
(A) Deep ocean propagation - Wave shoaling - Inundation - Earth crust rupture
(B) Earth crust rupture - Deep ocean propagation - Wave shoaling - Inundation
(C) Wave shoaling - Earth crust rupture - Inundation - Deep ocean propagation
(D) Earth crust rupture - Inundation - Deep ocean propagation - Wave shoaling
(E) Answer not known

29. Consider the following cyclonic storms affecting Tamil Nadu:
I. Nivar
II. Gaja
III. Mandous
IV. Vardah
Which of the following is the correct chronological order of their occurrence?
(A) IV, II, I, III
(B) II, IV, I, III
(C) I, II, III, IV
(D) IV, I, II, III
(E) Answer not known

30. Which of the following pairs regarding volcanic types is correctly matched?
(A) Dormant Volcano - Deccan Traps
(B) Active Volcano - Barren Island
(C) Extinct Volcano - Mount Etna
(D) Shield Volcano - Himalayas
(E) Answer not known

31. Which of the following pairs is incorrectly matched regarding the 2004 Indian Ocean Tsunami?
(A) Trigger mechanism - Undersea volcanic eruption
(B) Origin - Coast of Sumatra, Indonesia
(C) Year of occurrence - 2004
(D) Worst affected TN district - Nagapattinam
(E) Answer not known

32. What is the precise definition of a Tsunami?
(A) A severe tropical cyclonic system forming over the warm Indian Ocean waters
(B) A continuous and gradual rise in sea level caused by accelerated global warming
(C) Ocean waves generated by massive displacements of the water column
(D) Abnormal high tides influenced solely by the lunar cycle and gravitational pull
(E) Answer not known

33. Where is India's only confirmed active volcano, Barren Island, located?
(A) Lakshadweep Sea
(B) Gulf of Mannar
(C) Arabian Sea
(D) Andaman Sea
(E) Answer not known

34. Which of the following technological systems was primarily established in India as a lesson learned from the 2004 Indian Ocean Tsunami?
(A) National Disaster Response Force (NDRF)
(B) Saffir-Simpson Scale
(C) Indian Tsunami Early Warning Centre (ITEWC)
(D) State Disaster Management Authority (SDMA)
(E) Answer not known

35. Identify the correct statement regarding Tamil Nadu's tsunami preparedness.
(A) Tamil Nadu relies exclusively on international agencies for receiving coastal alerts.
(B) The state uses early warning systems and promotes mangrove buffer zones.
(C) Tamil Nadu has banned all fishing activities permanently to avoid coastal casualties.
(D) Tsunami preparedness in Tamil Nadu excludes all forms of local community involvement.
(E) Answer not known

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IV. West Bengal
(A) I, II, IV, III
(B) I, IV, II, III
(C) II, I, IV, III
(D) IV, I, II, III
(E) Answer not known

50. Which of the following pairs regarding cyclone nomenclature is correctly matched?
(A) Saffir-Simpson Scale - Measures earthquake intensity
(B) TNSCDM - Tamil Nadu State Coastal Development Mission
(C) Naming Convention - WMO/ESCAP Panel contributions
(D) Bay of Bengal - Less prone to cyclones than the Arabian Sea
(E) Answer not known

51. Which of the following pairs regarding recent cyclones and their primary impact zones in Tamil Nadu is incorrectly matched?
(A) Cyclone Gaja - Delta districts (e.g., Nagapattinam, Thiruvarur)
(B) Cyclone Mandous - Kanyakumari and Tirunelveli
(C) Cyclone Vardah - Chennai and Tiruvallur
(D) Cyclone Nivar - Puducherry and Villupuram
(E) Answer not known

52. How is a tropical cyclone primarily defined in meteorology?
(A) A localized heavy rainfall event lasting for several consecutive months
(B) A high-pressure system bringing clear skies and intense heat waves
(C) A seismic event in the ocean causing massive water displacements
(D) A low-pressure system with rapidly rotating winds and rain
(E) Answer not known

53. Under the regional naming convention for cyclones in the North Indian Ocean, which organization coordinates the list of names?
(A) India Meteorological Department (IMD) / WMO Panel
(B) United Nations Environment Programme (UNEP)
(C) Indian Space Research Organisation (ISRO)
(D) National Disaster Management Authority (NDMA)
(E) Answer not known

54. The Saffir-Simpson scale is primarily used to classify cyclones/hurricanes based on which parameter?
(A) The amount of rainfall generated
(B) The size of the storm surge
(C) The maximum sustained wind speed
(D) The diameter of the cyclone's eye
(E) Answer not known

55. Identify the correct statement regarding cyclone early warning in India.
(A) The IMD is the nodal agency for providing cyclone warnings.
(B) Early warnings are issued exclusively by the National Response Force.
(C) Warnings are issued only after a cyclone has made landfall.
(D) The Saffir-Simpson scale is never applicable to Indian Ocean storms.
(E) Answer not known

56. Identify the incorrect statement regarding the cyclone-prone regions of India.
(A) The east coast is more prone to cyclones than the west coast.
(B) Cyclones forming in the Bay of Bengal are generally more frequent and intense.
(C) Tamil Nadu, Andhra Pradesh, and Odisha are highly vulnerable states.
(D) The Arabian Sea accounts for about 80% of all cyclonic storms hitting India.
(E) Answer not known

57. Which of the following is an exception to the essential conditions required for the formation of a tropical cyclone?
(A) High sea surface temperature (above 27°C)
(B) Strong vertical wind shear
(C) Presence of the Coriolis force
(D) Pre-existing weak low-pressure area
(E) Answer not known

58. What is the most appropriate proactive strategy for protecting coastal communities in Tamil Nadu from cyclonic storm surges?
(A) Constructing temporary relief camps strictly during the peak disaster phase
(B) Relocating all coastal populations

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V. Cyclone preparedness focuses only on the post-landfall recovery phase.

Which of the above statements is/are correct?
(A) I, III, IV and V
(B) II, III, IV and V
(C) I, II, IV and V
(D) I, II, III and IV
(E) Answer not known

44. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option.
Assertion (A): The east coast of India is more vulnerable to cyclones than the west coast.
Reason (R): The Bay of Bengal is relatively warmer and receives higher rainfall and sluggish winds, fostering cyclone formation and movement towards the east coast.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

45. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option.
Assertion (A): Tropical cyclones are named according to predefined regional lists maintained by meteorological organizations.
Reason (R): Naming cyclones helps in quick identification, eliminating confusion, and enhancing public awareness and response.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

46. Match the following major cyclones in List I with their respective years of occurrence in List II:
List I: (Cyclone)
P. Vardah
Q. Gaja
R. Nivar
S. Mandous
List II: (Year)
I. 2018
II. 2022
III. 2016
IV. 2020
(A) P-III, Q-I, R-IV, S-II
(B) P-I, Q-III, R-II, S-IV
(C) P-III, Q-IV, R-I, S-II
(D) P-II, Q-I, R-IV, S-III
(E) Answer not known

47. Match the storm categories based on the Saffir-Simpson Hurricane Wind Scale in List I with their relative intensities in List II:
List I: (Category)
P. Category 1
Q. Category 3
R. Category 5
S. Tropical Depression
List II: (Intensity)
I. Catastrophic damage, winds 252 km/h or higher
II. Very dangerous winds, some damage
III. Devastating damage will occur
IV. Maximum sustained winds of 62 km/h or less
(A) P-II, Q-III, R-I, S-IV
(B) P-IV, Q-II, R-I, S-III
(C) P-I, Q-II, R-III, S-IV
(D) P-II, Q-I, R-III, S-IV
(E) Answer not known

48. Which of the following is the correct sequence of stages in the formation and development of a tropical cyclone?
(A) Tropical Disturbance - Tropical Depression - Tropical Storm - Severe Cyclonic Storm
(B) Tropical Depression - Tropical Disturbance - Severe Cyclonic Storm - Tropical Storm
(C) Severe Cyclonic Storm - Tropical Storm - Tropical Depression - Tropical Disturbance
(D) Tropical Disturbance - Tropical Storm - Tropical Depression - Severe Cyclonic Storm
(E) Answer not known

49. Arrange the following states from highest to lowest in terms of general cyclone vulnerability based on historical data:
I. Odisha
II. Andhra Pradesh
III. Maharashtra

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80. Which feature is most universally characteristic of a Meteorological Drought?
(A) Emptying of large dam reservoirs
(B) Widespread failure of staple crops
(C) A significant statistical deficit in regional rainfall
(D) High inflation in food grain prices
(E) Answer not known

81. Consider the following statements about landslides in Tamil Nadu:
I. The Nilgiris district is highly vulnerable to landslides.
II. Unplanned construction and deforestation increase landslide risk.
III. Landslides in Tamil Nadu occur only during the summer season.
Which of the above statements is/are correct?
(A) II and III
(B) I and II
(C) I only
(D) III only
(E) Answer not known

82. Consider the following statements regarding heat waves in India:
I. A heat wave is declared if the maximum temperature of a station reaches at least 40°C for plains.
II. It is declared if the temperature reaches at least 30°C for hilly regions.
III. Heat waves typically occur between March and June.
IV. Heat waves have negligible impacts on human health.
Which of the above statements are correct?
(A) I and II
(B) I, II and III
(C) I, III and IV
(D) II, III and IV
(E) Answer not known

83. Consider the following statements regarding forest fires:
I. They can be caused by both natural and human factors.
II. Pine needle litter in forests is highly combustible.
III. The Anamalai and Nilgiris regions in Tamil Nadu have experienced significant forest fires.
IV. Controlled burning is one of the mitigation strategies.
V. Forest fires only occur in dense tropical evergreen forests.
Which of the above statements is/are correct?
(A) I, III, IV and V
(B) II, III, IV and V
(C) I, II, IV and V
(D) I, II, III and IV
(E) Answer not known

84. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option.
Assertion (A): The Nilgiris and Kodaikanal regions frequently experience landslides during heavy monsoons.
Reason (R): Steep slopes, intense rainfall, and anthropogenic activities like road widening destabilize the soil structure.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

85. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option.
Assertion (A): Meteorological agencies regularly issue color-coded heat wave alerts.
Reason (R): Severe heat waves can cause fatal conditions like heatstroke and significantly affect vulnerable populations.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

86. Match the following hazards in List I with their highly vulnerable regions in Tamil Nadu in List II:
List I: (Hazard)
P. Landslides
Q. Cyclones
R. Urban Flooding

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permanently to higher inland areas
(C) Using multi-purpose shelters and conserving mangrove forests
(D) Implementing urban flooding drainage systems exclusively in the Chennai region
(E) Answer not known

59. When analyzing cyclone evacuation protocols in Tamil Nadu, which concept ensures that vulnerable populations are moved efficiently?
(A) The Build Back Better concept
(B) The Sendai Framework legally binding treaties
(C) Disaster risk financing through PMFBY
(D) Local mapping of low-lying areas and safe routes
(E) Answer not known

60. Which key feature characterizes the 'eye' of a severe tropical cyclone?
(A) A region of calm weather and lowest pressure at the center
(B) The area with the heaviest rainfall and strongest winds
(C) A structure that forms only when the cyclone makes landfall
(D) High-pressure downdrafts causing intense cold throughout the storm
(E) Answer not known

61. Consider the following statements regarding the causes of floods:
I. Excessive and prolonged rainfall is a primary natural cause.
II. Poor natural drainage and silting of riverbeds exacerbate flooding.
III. Deforestation and urbanization have no impact on flood severity.
Which of the above statements is/are correct?
(A) II and III
(B) I and II
(C) I only
(D) III only
(E) Answer not known

62. Consider the following statements regarding the 2015 Chennai floods:
I. It was caused by unprecedented rainfall during the Northeast monsoon.
II. Unplanned urban development over natural wetlands significantly worsened the impact.
III. The flooding prompted major reforms in urban storm-water drain planning.
IV. The disaster was entirely natural with no human-induced factors contributing to its severity.
Which of the above statements are correct?
(A) I, II and III
(B) I, III and IV
(C) I and II
(D) II, III and IV
(E) Answer not known

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63. Consider the following statements regarding urban flooding:
I. It is significantly worsened by the concretization of open spaces.
II. Outdated and clogged drainage systems are major contributors.
III. Encroachment of water bodies is a critical cause in cities like Chennai and Mumbai.
IV. Urban flooding occurs strictly during cyclonic storms.
V. Proper urban planning and desilting can mitigate its impact.
Which of the above statements is the correct combination?
(A) I, II, III and V
(B) I, II, IV and V
(C) II, III, IV and V
(D) I, III, IV and V
(E) Answer not known

64. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option.
Assertion (A): Urban flooding in Chennai and Mumbai is increasingly frequent during monsoon seasons.
Reason (R): Rapid urbanization has led to the loss of natural water bodies and wetlands, reducing the natural drainage capacity.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

65. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option.
Assertion (A): The national drought management guidelines emphasize monitoring meteorological indicators heavily.
Reason (R): Meteorological drought always immediately translates into a socio-economic drought.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

66. Match the following types of droughts in List I with their definitions in List II:
List I: (Drought Type)
P. Meteorological Drought
Q. Hydrological Drought
R. Agricultural Drought
S. Socio-economic Drought
List II: (Definition)
I. Shortfall in precipitation over a specific period
II. Depletion of surface and subsurface water resources
III. Soil moisture deficiency affecting crop yields
IV. Water shortage affecting the supply of economic goods and services
(A) P-I, Q-II, R-III, S-IV
(B) P-II, Q-I, R-IV, S-III
(C) P-I, Q-III, R-II, S-IV
(D) P-III, Q-I, R-II, S-IV
(E) Answer not known

67. Match the flood-related terms in List I with their associated contexts in List II:
List I: (Term)
P. Flash Flood
Q. Riverine Flood
R. Coastal Flood
S. Urban Flood
List II: (Context)
I. Caused by sudden, intense rainfall in a short duration
II. Overflowing of river banks due to heavy catchment rainfall
III. Inundation caused by storm surges or tsunamis
IV. Caused by overwhelmed municipal drainage systems
(A) P-I, Q-II, R-III, S-IV
(B) P-II, Q-I, R-IV, S-III
(C) P-I, Q-IV, R-III, S-II
(D) P-IV, Q-III, R-II, S-I
(E) Answer not known

68. Which of the following correctly sequences the general progression of drought types?
(A) Meteorological - Agricultural - Hydrological - Socio-economic
(B) Agricultural - Hydrological - Meteorological - Socio-economic
(C) Hydrological - Meteorological - Agricultural - Socio-economic
(D) Meteorological - Hydrological - Socio-economic - Agricultural
(E) Answer not known

69. Arrange the following states in decreasing order of their general vulnerability to chronic droughts according to historical data:
I. Rajasthan
II. Gujarat
III. Maharashtra
IV. Kerala
(A) I, II, III, IV
(B) IV, III, II, I
(C) I, III, II, IV
(D) II, I, III, IV
(E) Answer not known

70. Which of the following pairs regarding floods is correctly matched?
(A) 2015 Chennai Floods - Resulted primarily from a tsunami
(B) Urban Flooding - Caused by excellent drainage networks
(C) Flash Floods - Rapid onset in hilly or mountainous regions
(D) Riverine Floods - Inundation restricted strictly to coastal zones
(E) Answer not known

71. Which of the following pairs regarding drought-prone regions in India is incorrectly matched?
(A) Brahmaputra Valley (Assam) - Highly drought-prone

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(B) Thar Desert region - Chronically drought-prone
(C) Vidarbha region (Maharashtra) - Highly drought-prone
(D) Rayalaseema (Andhra Pradesh) - Frequently drought-prone
(E) Answer not known

72. How is a Hydrological Drought specifically defined?
(A) A prolonged deficiency of rainfall compared to the statistical average
(B) A condition where inadequate soil moisture causes widespread crop failure
(C) A situation where food demand exceeds the available market supply
(D) Depletion of surface and groundwater like rivers and lakes
(E) Answer not known

73. The devastating urban floods in Chennai occurred predominantly during which monsoon season of 2015?
(A) Southwest Monsoon
(B) Northeast Monsoon
(C) Pre-monsoon showers
(D) Western Disturbances
(E) Answer not known

74. Which major urban planning failure was identified as a core cause of the 2015 Chennai floods?
(A) Excessive construction of multi-purpose cyclone shelters
(B) Over-widening of the Adyar and Cooum rivers
(C) Encroachment of marshlands and historical lakes
(D) Strict implementation of Coastal Regulation Zone norms
(E) Answer not known

75. Identify the correct statement regarding national drought management guidelines.
(A) They state that droughts can be entirely prevented through short-term rainfall.
(B) They are only applicable to the northwestern states of India.
(C) They advise complete reliance on international aid during socio-economic droughts.
(D) They mandate early warning systems and water conservation
(E) Answer not known

76. Identify the incorrect statement regarding the annual impact of floods in India.
(A) Urban flooding in India is solely caused by changes in global climate patterns.
(B) India is one of the most flood-prone countries in the world.
(C) The Ganga and Brahmaputra river basins are major flood-prone regions.
(D) Annually, floods cause significant loss of life, crops, and infrastructure in India.
(E) Answer not known

77. Which of the following is an exception to the common anthropogenic causes of urban flooding?
(A) Concretization of urban landscapes
(B) Encroachment of floodplains and lakes
(C) Excessive natural tectonic activity
(D) Improper disposal of solid waste clogging drains
(E) Answer not known

78. What is the most appropriate long-term lesson learned from the urban flooding events in Chennai and Mumbai?
(A) The need to build taller residential structures
(B) Integrating wetlands and sustainable drainage in planning
(C) Shifting the entire capital cities to higher elevations
(D) Limiting weather forecasting strictly to rural areas
(E) Answer not known

79. When agricultural drought occurs, which mitigation strategy is theoretically most effective for ensuring food security?
(A) Promoting crop diversification and micro-irrigation
(B) Increasing reliance on water-intensive cash crops
(C) Discontinuing the crop insurance scheme
(D) Rapidly depleting deep groundwater reserves without recharge
(E) Answer not known

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36. Identify the incorrect statement about the characteristics of tsunami waves.
(A) Tsunami waves can travel at speeds exceeding 800 km/h in the deep ocean.
(B) Upon reaching shallow water, the wave's speed decreases while its height increases.
(C) Tsunamis consist of a series of waves, often referred to as a wave train.
(D) The distance between two successive tsunami wave crests in the open ocean is very short.
(E) Answer not known

37. Which of the following is a negative consequence of removing coastal buffer zones like mangroves?
(A) Higher coastal vulnerability to storm surges and tsunami waves
(B) A significant reduction in localized greenhouse gas emissions
(C) Enhanced natural warning capabilities for approaching ocean hazards
(D) Decreased risk of coastal soil erosion during heavy monsoon seasons
(E) Answer not known

38. Which of the following is the most appropriate long-term measure to mitigate tsunami impact in coastal Tamil Nadu?
(A) Building temporary shelters on the beach during the high-alert phase
(B) Constructing residential complexes below sea level along the shoreline
(C) Enforcing CRZ norms and restoring coastal bio-shields
(D) Relying on post-disaster relief funds as the primary mitigation strategy
(E) Answer not known

39. In the context of disaster preparedness, what does the creation of coastal buffer zones achieve?
(A) Absorbs wave energy and reduces inundation during tsunamis
(B) Eliminates the occurrence of all undersea tectonic earthquakes
(C) Provides a designated area for dumping non-biodegradable urban waste
(D) Prevents the formation of cyclonic storms in the central Bay of Bengal
(E) Answer not known

40. Which specific geographical feature is primarily responsible for the high frequency of earthquakes and tsunamis in the Pacific Ocean?
(A) The Mid-Atlantic Ridge
(B) The Mariana Trench
(C) The Great Barrier Reef
(D) The Pacific Ring of Fire
(E) Answer not known

41. Consider the following statements about cyclone formation:
I. A sea surface temperature of about 27°C or higher is required.
II. The presence of the Coriolis force is necessary to create a cyclonic vortex.
III. Cyclones frequently form exactly at the Equator due to intense heating.
Which of the above statements is/are correct?
(A) II and III
(B) I and II
(C) I only
(D) III only
(E) Answer not known

42. Consider the following statements regarding major cyclones affecting Tamil Nadu:
I. Cyclone Vardah severely impacted Chennai in 2016.
II. Cyclone Gaja primarily devastated the delta districts in 2018.
III. Cyclone Mandous made landfall near Mamallapuram in 2022.
IV. Cyclone Nivar affected the northern coastal districts in 2020.
Which of the above statements are correct?
(A) I, II and III
(B) II, III and IV
(C) I, II, III and IV
(D) I, II and IV
(E) Answer not known

43. Consider the following statements about cyclone preparedness in Tamil Nadu:
I. The State Disaster Management Authority coordinates the efforts.
II. Multi-purpose cyclone shelters have been constructed along the coast.
III. Early warnings are disseminated through SMS and public address systems.
IV. Evacuation protocols are strictly enforced for vulnerable low-lying areas.

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S. Forest Fires
List II: (Region)
I. Chennai City
II. Coastal Nagapattinam
III. The Nilgiris
IV. Anamalai Hills
(A) P-III, Q-II, R-I, S-IV
(B) P-II, Q-III, R-I, S-IV
(C) P-III, Q-I, R-II, S-IV
(D) P-I, Q-II, R-IV, S-III
(E) Answer not known

87. Match the weather anomalies in List I with their primary impacts in List II:
List I: (Anomaly)
P. Heat wave
Q. Cold wave and frost
R. Thunderstorm and Lightning
S. Flash floods
List II: (Impact)
I. Agricultural damage to crops like potatoes and tea
II. Fatal electrocution and structural fires
III. Dehydration and hyperthermia in humans
IV. Sudden localized washing away of infrastructure
(A) P-III, Q-I, R-II, S-IV
(B) P-I, Q-II, R-III, S-IV
(C) P-III, Q-II, R-I, S-IV
(D) P-IV, Q-I, R-II, S-III
(E) Answer not known

88. Which of the following is the correct sequence of phases in a forest fire progression?
(A) Pre-heating - Flaming combustion - Smoldering - Extinction
(B) Smoldering - Pre-heating - Extinction - Flaming combustion
(C) Flaming combustion - Smoldering - Pre-heating - Extinction
(D) Pre-heating - Smoldering - Flaming combustion - Extinction
(E) Answer not known

89. Arrange the following districts of Tamil Nadu based on their general vulnerability to landslides (from most vulnerable to least vulnerable):
I. The Nilgiris
II. Dindigul (Kodaikanal)
III. Coimbatore (Valparai)
IV. Thanjavur
(A) I, II, III, IV
(B) I, III, II, IV
(C) II, I, III, IV
(D) IV, III, II, I
(E) Answer not known

90. Which of the following pairs regarding forest fire incidents is correctly matched?
(A) Amazon rainforest fires - Exclusively a natural phenomenon
(B) Anamalai hills - completely devoid of forest fire risks
(C) Controlled burning - A method that maximizes uncontrollable wildfires
(D) Kurangani hills fire (2018) - Theni district, Tamil Nadu
(E) Answer not known

91. Which of the following pairs regarding extreme temperature events is incorrectly matched?
(A) Heat Wave (Plains) - Threshold of 40°C
(B) Heat Wave (Hilly regions) - Threshold of 30°C
(C) Cold Wave - Causes severe frost damage to agriculture
(D) Severe Heat Wave - Departure of 2°C to 3°C from normal
(E) Answer not known

92. What is the meteorological definition threshold for declaring a heat wave in the coastal regions of India?
(A) Maximum temperature reaches at least 37°C
(B) Maximum temperature reaches at least 30°C
(C) Maximum temperature reaches at least 45°C
(D) Maximum temperature reaches at least 40°C
(E) Answer not known

93. Lightning and thunderstorms are a major cause of natural disaster-related deaths. Which region in Tamil Nadu typically records high instances during pre-monsoon and monsoon periods?
(A) Delta regions only
(B) The interior and western ghats districts
(C) Only the coastal strip of Chennai
(D) The entire state faces identical daily lightning strikes

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(E) Answer not known

94. The vulnerability of Kodaikanal to landslides is predominantly exacerbated by which of the following human activities?
(A) Sustainable terraced farming
(B) Construction of multi-purpose cyclone shelters
(C) Extensive mangrove afforestation
(D) Unregulated construction and slope modification
(E) Answer not known

95. Identify the correct statement regarding cold waves and frost in India.
(A) Severe cold waves and frost damage high-altitude crops.
(B) Cold waves predominantly affect the southern tip of Tamil Nadu.
(C) Cold waves are considered a recognizable natural hazard.
(D) Cold waves lead to an immediate increase in atmospheric humidity and rainfall.
(E) Answer not known

96. Identify the incorrect statement regarding landslides in the Nilgiris.
(A) Landslides in the Nilgiris are primarily triggered by intense rainfall during the monsoon.
(B) The geological structure of the region makes it inherently vulnerable.
(C) Human interventions have successfully eliminated all landslide risks in Ooty.
(D) Landslide zonation mapping is used to identify high-risk areas in the district.
(E) Answer not known

97. Which of the following is an exception to the common causes of landslides?
(A) Intense and prolonged rainfall
(B) Seismic activity (earthquakes)
(C) Groundwater extraction in flat desert plains
(D) Deforestation and slope modification
(E) Answer not known

98. What is the most appropriate community protection measure against lightning strikes?
(A) Standing under tall, isolated trees during a thunderstorm
(B) Using lightning arresters and seeking indoor shelter
(C) Using wired electrical appliances during a thunderstorm
(D) Seeking shelter in open water bodies
(E) Answer not known

99. How does prolonged frost conceptually impact agricultural output in high-altitude regions like the Nilgiris?
(A) It increases the photosynthetic efficiency of tea leaves.
(B) It causes plant cell water to freeze and rupture tissues.
(C) It acts as a natural fertilizer, significantly boosting crop yields.
(D) It prevents the occurrence of soil erosion completely.
(E) Answer not known

100. Which feature is most useful for identifying landslide-prone zones in a geographic region?
(A) Flat terrain with high soil salinity
(B) Proximity to the equator and low elevation
(C) Extensive presence of undisturbed natural wetlands
(D) Steep slopes, weak geology, and high rainfall
(E) Answer not known

101. Consider the following statements regarding the Disaster Management Act, 2005:
I. It mandated the creation of the National Disaster Management Authority (NDMA).
II. It established State Disaster Management Authorities (SDMAs).
III. It completely abolished the role of District Magistrates in disaster management.
Which of the above statements is/are correct?
(A) I and II
(B) II and III
(C) I only
(D) III only
(E) Answer not known

102. Consider the following statements about the National Disaster Response Force (NDRF):
I. It was established under the Disaster Management Act, 2005.
II. It is a specialized force for proactive response to threatening disaster situations.
III. NDRF battalions are constituted by drawing personnel from Central Armed Police

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Forces.
IV. The NDRF operates only internationally and not within Indian borders.
Which of the above statements are correct?
(A) I, II and III
(B) I, III and IV
(C) II, III and IV
(D) I and II
(E) Answer not known

103. Consider the following statements regarding the State Disaster Management Authority (SDMA):
I. The Chief Minister is the ex-officio Chairperson of the SDMA.
II. It is responsible for laying down state-level disaster management policies.
III. It approves the State Disaster Management Plan.
IV. Tamil Nadu has established its own SDMA in accordance with the 2005 Act.
V. It operates independently without any guidelines from national authorities.
Which of the above statements is/are correct?
(A) I, II, III and IV
(B) I, III, IV and V
(C) II, III, IV and V
(D) I, II, IV and V
(E) Answer not known

104. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option.
Assertion (A): The District Disaster Management Authority (DDMA) acts as the primary planning, coordinating, and implementing body for disaster management at the local level.
Reason (R): Disasters occur at the local level, making the district administration the first responder.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

105. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option.
Assertion (A): Response force battalions are strategically pre-positioned in vulnerable locations prior to an impending disaster like a cyclone.
Reason (R): Pre-positioning drastically reduces response time and facilitates immediate search, rescue, and relief operations.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

106. Match the following authorities established under the Disaster Management Act, 2005 in List I with their respective Chairpersons in List II:
List I: (Authority)
P. NDMA
Q. SDMA
R. DDMA
S. National Executive Committee (NEC)
List II: (Chairperson)
I. Prime Minister
II. Chief Minister
III. District Magistrate / Collector
IV. Union Home Secretary
(A) P-I, Q-II, R-III, S-IV
(B) P-II, Q-I, R-IV, S-III
(C) P-I, Q-III, R-II, S-IV
(D) P-IV, Q-II, R-III, S-I
(E) Answer not known

107. Match the disaster response forces and centers in List I with their core functions in List II:
List I: (Force/Center)
P. NDRF
Q. SDRF
R. ITEWC
S. IMD
List II: (Function)
I. Specialized national-level search and rescue
II. State-level rapid response and relief
III. Dissemination of tsunami advisories
IV. Forecasting and warning of cyclones and heat waves
(A) P-I, Q-II, R-III, S-IV
(B) P-II, Q-I, R-IV, S-III
(C) P-I, Q-IV, R-III, S-II

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combination?
(A) I, II, III and V
(B) I, III, IV and V
(C) II, III, IV and V
(D) I, II, IV and V
(E) Answer not known

124. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option.
Assertion (A): The Pradhan Mantri Fasal Bima Yojana (PMFBY) plays a vital role in disaster risk financing for the agricultural sector.
Reason (R): It provides insurance coverage and financial support to farmers in the event of failure of notified crops due to natural calamities.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

125. In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option.
Assertion (A): The frequency and intensity of hydro-meteorological disasters like cyclones and floods have been increasing.
Reason (R): International scientific assessments confirm that human-induced climate change is altering extreme weather events.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

126. Match the following Early Warning Systems/ Agencies in List I with their respective forecasting domains in List II:
List I: (Agency)
P. IMD
Q. INCOIS
R. Central Water Commission (CWC)
S. Forest Survey of India (FSI)
List II: (Domain)
I. Cyclone and weather forecasting
II. Tsunami and ocean state forecasting
III. Flood forecasting for major river basins
IV. Forest fire alerts
(A) P-I, Q-II, R-III, S-IV
(B) P-II, Q-I, R-IV, S-III
(C) P-I, Q-III, R-II, S-IV
(D) P-IV, Q-II, R-III, S-I
(E) Answer not known

127. Match the phases of the Disaster Management Cycle in List I with their characteristic activities in List II:
List I: (Phase)
P. Mitigation
Q. Preparedness
R. Response
S. Recovery
List II: (Activity)
I. Constructing earthquake-resistant buildings
II. Conducting mock drills and stockpiling relief goods
III. Search and rescue operations by response forces
IV. Implementation of 'Build Back Better' housing programmes
(A) P-I, Q-II, R-III, S-IV
(B) P-II, Q-I, R-IV, S-III
(C) P-IV, Q-III, R-II, S-I
(D) P-I, Q-III, R-II, S-IV
(E) Answer not known

128. Which of the following correctly sequences the continuous phases of the standard Disaster Management Cycle?
(A) Mitigation - Preparedness - Response - Recovery
(B) Response - Mitigation - Recovery - Preparedness
(C) Preparedness - Recovery - Mitigation - Response
(D) Recovery - Response - Preparedness - Mitigation
(E) Answer not known

129. Arrange the following steps of an early warning dissemination chain in the correct logical order:
I. Detection of anomaly by monitoring equipment
II. Analysis and generation of warning by nodal agency

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(D) The DDMA is legally authorized to declare a national emergency.
(E) Answer not known

117. Which of the following is an exception to the mandated functions of the national authority?
(A) Laying down policies on disaster management
(B) Directly executing rescue operations at every local village level
(C) Approving the National Plan
(D) Laying down guidelines to be followed by the State Authorities
(E) Answer not known

118. What is the most significant paradigm shift brought about by the Disaster Management Act, 2005?
(A) A shift from a proactive, mitigation-based approach to a reactive, relief-centric approach
(B) The privatization of all disaster management activities
(C) A holistic shift from relief to proactive risk management
(D) The delegation of all disaster responsibilities to international NGOs
(E) Answer not known

119. In the context of the DDMA, why is local-level response considered the most critical phase in disaster management?
(A) Because local authorities have access to unlimited central funds
(B) Because national forces are legally barred from entering districts
(C) Local communities and admin are the first responders.
(D) Because international agencies strictly operate at the local level
(E) Answer not known

120. Which distinctive feature characterises the personnel of the National Disaster Response Force (NDRF)?
(A) Trained in search, rescue, CBRN response, and diving.
(B) They are drawn exclusively from retired military veterans.
(C) They are temporary contract workers hired only post-disaster.
(D) They operate solely via aerial surveillance without on-ground deployment.
(E) Answer not known

121. Consider the following statements about the Indian Tsunami Early Warning Centre (ITEWC):
I. It is located in Hyderabad.
II. It is operated by the Indian National Centre for Ocean Information Services (INCOIS).
III. It only provides tsunami warnings for the Indian coastline.
Which of the above statements is/are correct?
(A) I and II
(B) II and III
(C) I only
(D) III only
(E) Answer not known

122. Consider the following statements regarding the National Disaster Management Plan (NDMP) 2016:
I. It aligns strictly with the goals of the Sendai Framework.
II. It comprehensively covers all phases of the disaster management cycle.
III. It provides a framework for horizontal and vertical integration among agencies.
IV. It mandates that disaster management is solely the responsibility of the central government.
Which of the above statements are correct?
(A) I, II and III
(B) I, III and IV
(C) II, III and IV
(D) I and II
(E) Answer not known

123. Consider the following statements about post-disaster reconstruction and the 'Build Back Better' concept:
I. It aims to reduce vulnerability to future disasters.
II. It involves improving the structural integrity of newly constructed housing.
III. It emphasizes community participation and restoring livelihoods.
IV. It suggests rebuilding structures exactly as they were before the disaster.
V. It integrates climate change adaptation into recovery.
Which of the above statements is the correct

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9. (A) III, II, I, IV
Understanding the historical timeline of disasters is essential for assessing the evolution of management practices. The sequence begins with the 1991 Uttarkashi earthquake, followed by the 1993 Latur earthquake. Later, the 2001 Bhuj earthquake occurred, and the series concludes with the 2004 Indian Ocean Tsunami. This chronological order highlights how major events prompted institutional reforms in India.

10. (C) Zone IV - High Damage Risk Zone
Seismic zones in India are classified based on the expected intensity of ground shaking and potential for structural damage. Zone IV is specifically designated as a High Damage Risk Zone, indicating a significant probability of severe seismic activity. Understanding these designations helps in implementing rigorous construction standards and disaster mitigation plans to safeguard lives and property in vulnerable regions.

11. (D) Vulnerability - The physical force of a hazard
Understanding terms is essential for effective mitigation. While a hazard represents a dangerous phenomenon or human activity, vulnerability describes the characteristics and circumstances of a community that make it susceptible to the damaging effects of that hazard. Misidentifying vulnerability as the physical force itself neglects the socio-economic and physical factors that determine the actual impact on human populations.

12. (A) A serious disruption of a community's functioning involving widespread losses
International organizations define a disaster as a severe interruption in the functioning of a society that causes human, material, or environmental losses. This condition exceeds the ability of the affected community to cope using its own resources alone. It emphasizes the scale of impact rather than just the occurrence of a physical hazard, highlighting the need for external assistance.

13. (B) Intensity based on perceived shaking and structural damage
The Mercalli scale provides a qualitative measurement of an earthquake's impact on the Earth's surface. Unlike magnitude scales that measure energy, this scale focuses on the intensity of shaking as perceived by people and the resulting damage to buildings and infrastructure. It is particularly useful for historical seismic analysis and for understanding how different environments respond to ground motion.

14. (B) 2015
The Sendai Framework for Disaster Risk Reduction was adopted during the Third United Nations World Conference held in Japan in 2015. This global roadmap establishes clear targets and priorities to prevent new risks and reduce existing ones over a fifteen-year period. It represents a collective international commitment to building resilience and protecting sustainable development from the impact of disasters.

15. (A) Disaster risk results from hazard, vulnerability, and exposure.
Disaster risk is a complex interaction between three primary factors. It occurs when a physical hazard meets a population that is both exposed to the event and lacks the resilience to withstand its effects. Reducing risk requires addressing all these components, emphasizing that a hazard only leads to disaster if the community is susceptible and situated in a dangerous area.

16. (C) Zone I represents regions with the highest earthquake vulnerability.
The seismic map of India currently uses four zones, starting from Zone II to Zone V. Zone I is no longer used in the current classification system because no part of the country is considered completely free from seismic risk. Consequently, describing Zone I as the area with the highest vulnerability is factually incorrect within the modern Indian context.

17. (D) Tropical Cyclones
Natural hazards are often categorized based on their primary triggering mechanisms. Earthquakes, tsunamis, and volcanoes are classified as geological hazards because they originate from internal tectonic or volcanic processes of the Earth. In contrast, tropical cyclones are considered hydro-meteorological hazards as they are driven by atmospheric conditions, ocean temperatures, and moisture levels rather than crustal movements.

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III. Dissemination of alert to local administration
IV. Evacuation of vulnerable community
(A) I, II, III, IV
(B) I, III, II, IV
(C) II, I, III, IV
(D) II, III, I, IV
(E) Answer not known

130. Which of the following pairs regarding disaster risk financing is correctly matched?
(A) PMFBY - Crop insurance against natural calamities
(B) SDRF Fund - Managed directly by the United Nations
(C) Build Back Better - A micro-finance loan scheme
(D) NDRF Fund - Specifically for industrial expansion
(E) Answer not known

131. Which of the following pairs regarding climate change and disaster frequency is incorrectly matched?
(A) IPCC - Intergovernmental Panel on Climate Change
(B) Sea Level Rise - Reduced coastal city vulnerability
(C) Global Warming - Increased intensity of cyclones
(D) Changing precipitation - Increased frequency of flash floods
(E) Answer not known

132. What is the core philosophy behind the 'Build Back Better' concept in post-disaster reconstruction?
(A) Systematic vulnerability reduction during reconstruction.
(B) Rebuilding infrastructure rapidly using the cheapest available materials
(C) Restoring the affected area to its exact pre-disaster state without modifications
(D) Abandoning the disaster-struck area and building a new city elsewhere
(E) Answer not known

133. Where is the Indian Tsunami Early Warning Centre (ITEWC) officially located?
(A) Chennai
(B) Mumbai
(C) Hyderabad
(D) Visakhapatnam
(E) Answer not known

134. Which nodal agency is officially responsible for issuing cyclone warnings in India?
(A) Indian Space Research Organisation (ISRO)
(B) National Institute of Oceanography (NIO)
(C) India Meteorological Department (IMD)
(D) Ministry of Defence
(E) Answer not known

135. Identify the correct statement regarding disaster relief and rehabilitation funds in India.
(A) NGOs are prohibited by law from coordinating in disaster relief.
(B) Disaster relief funds can be legally diverted for general state election campaigns.
(C) SDRF is the primary response fund for State Governments.
(D) The Central Government completely bears 100% of the SDRF corpus for all states.
(E) Answer not known

136. Identify the incorrect statement regarding disaster preparedness at the community level.
(A) Mock drills help in identifying gaps in emergency response plans.
(B) School safety programmes are designed to educate children on evacuation procedures.
(C) Community participation is discouraged as it slows down professional response operations.
(D) Community training ensures that local people can act effectively as first responders.
(E) Answer not known

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137. Which of the following is not a recognized objective of the National Disaster Management Plan (NDMP) 2016?
(A) Improving understanding of disaster risk, hazards, and vulnerabilities
(B) Strengthening disaster risk governance
(C) Investing in disaster risk reduction for resilience
(D) Privatizing all national disaster response forces
(E) Answer not known

138. Which of the following is the most appropriate strategy for coordinating post-disaster rehabilitation involving NGOs?

(D) P-III, Q-I, R-II, S-IV
(E) Answer not known

108. Which of the following represents the correct hierarchical sequence of Disaster Management Authorities in India from the apex to the local level?
(A) NDMA - SDMA - DDMA - Local Authorities
(B) SDMA - NDMA - DDMA - Local Authorities
(C) DDMA - SDMA - NDMA - Local Authorities
(D) NDMA - DDMA - SDMA - Local Authorities
(E) Answer not known

109. Consider the following institutional developments in Indian Disaster Management:
I. Enactment of the Disaster Management Act
II. Release of the National Disaster Management Plan
III. Adoption of the Sendai Framework
IV. 2004 Indian Ocean Tsunami prompting institutional changes
Which of the following is the correct chronological order?
(A) IV, I, III, II
(B) I, IV, II, III
(C) IV, III, I, II
(D) III, IV, I, II
(E) Answer not known

110. Which of the following pairs regarding the provisions of the Disaster Management Act, 2005 is correctly matched?
(A) Section 3 - Establishment of NDMA
(B) Section 14 - Disbandment of SDMA
(C) Chapter X - Regulates agricultural subsidies
(D) Section 1 - Defines coastal buffer zones exclusively
(E) Answer not known

111. Which of the following pairs regarding the composition of Disaster Management Authorities is incorrectly matched?
(A) NDMA Chairperson - Prime Minister
(B) SDMA Chairperson - Chief Minister
(C) DDMA Co-Chairperson - Chairperson of Zila Parishad (where applicable)
(D) NEC Chairperson - Minister of Defence
(E) Answer not known

112. Under the Disaster Management Act, 2005, what is the primary role of the State Executive Committee (SEC)?
(A) Assisting the SDMA and coordinating performance action
(B) To conduct international diplomacy for disaster relief
(C) To act as the sole authority for weather forecasting
(D) To command the armed forces during a disaster
(E) Answer not known

113. In which year was the National Disaster Response Force (NDRF) formally constituted?
(A) 2001
(B) 2006
(C) 2015
(D) 1999
(E) Answer not known

114. Who is the ex-officio Chairperson of the National Disaster Management Authority (NDMA)?
(A) The Prime Minister of India
(B) The President of India
(C) The Union Home Minister
(D) The Director General of NDRF
(E) Answer not known

115. Identify the correct statement regarding the State Disaster Response Force (SDRF).
(A) It consists only of civilian volunteers with no police training.
(B) Specialized state-level force modeled on the national units.
(C) It can only be deployed outside the state of origin.
(D) It is directly commanded by the Prime Minister.
(E) Answer not known

116. Identify the incorrect statement regarding the District Disaster Management Authority (DDMA).
(A) Every state government must establish a DDMA for every district.
(B) The District Magistrate or Collector serves as its Chairperson.
(C) The DDMA has the power to examine the construction in any area to enforce safety standards.

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ANSWERS

1. (D) I and II
Seismic events in India have caused significant loss of life and infrastructure. The 2001 Bhuj earthquake in Gujarat and the 1993 Latur earthquake in Maharashtra are historical examples that highlight the country's vulnerability. While these two occurrences are correctly dated, the Uttarkashi event took place in 1991, making it a critical point for studying regional seismic history.

2. (C) I, III and IV
India utilizes a classification system consisting of four seismic zones to categorize regional earthquake risks. Zone V represents the highest risk areas, while Zone II is designated for low-damage risks. Although the entire state of Tamil Nadu is not exclusively in Zone IV, understanding these zones is crucial for implementing appropriate building codes and disaster preparedness strategies nationwide.

3. (B) I, II, IV and V
The Sendai Framework is a non-binding international agreement designed to guide disaster risk reduction from 2015 to 2030. It succeeded the Hyogo Framework and emphasizes a proactive shift toward managing risks rather than just managing disasters. India remains a committed signatory, focusing on improving institutional governance and enhancing local resilience to mitigate the socio-economic impacts of calamities.

4. (B) Both A and R are true but R is not the correct explanation of A.
Different scales are used to quantify seismic events based on specific parameters. The Richter scale objectively calculates the magnitude by measuring energy released at the source, while the Mercalli scale subjectively assesses intensity through observed damage and human perception. While both statements are scientifically accurate, the description of intensity measurements does not provide a causal explanation for magnitude calculations.

5. (D) A is false but R is true.
A natural hazard is a physical event that does not automatically result in a catastrophe. A disaster only manifests when such an event intersects with a vulnerable population lacking the capacity to cope. Therefore, the condition of the affected area is a determining factor, as high resilience and low vulnerability can prevent a hazard from becoming a large-scale disaster.

6. (A) P-II, Q-IV, R-I, S-III
Effective risk management requires precise terminology to define various disaster components. Hazards are potentially damaging phenomena, while vulnerability refers to conditions increasing susceptibility to those hazards. Resilience describes the capacity to recover from impacts, and risk represents the probabilistic potential for loss. Correctly matching these terms is fundamental for developing scientific strategies to protect communities and essential infrastructure.

7. (A) P-III, Q-I, R-II, S-IV
India has experienced several major seismic and oceanic disasters over the past few decades. The Uttarkashi earthquake occurred in 1991, followed by the Latur event in 1993. The Bhuj earthquake caused massive destruction in 2001, and the devastating Indian Ocean tsunami was triggered in 2004. Recognizing these specific years helps researchers analyze the historical patterns of natural hazards.

8. (A) Zone II - Zone III - Zone IV - Zone V
The seismic zonation map of India provides a logical framework for understanding regional earthquake vulnerabilities. Risks increase progressively starting from Zone II, which is categorized as a low-damage zone, through Zone III and IV, reaching the maximum risk level in Zone V. This hierarchical sequence is vital for engineers and urban planners to ensure structures meet specific safety requirements.

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(A) Allowing NGOs to operate entirely independently of the local administration
(B) Centralized coordination of NGO efforts by district admin.
(C) Banning NGO intervention to rely solely on government machinery
(D) Taxing NGOs heavily during the relief phase
(E) Answer not known

139. How does climate change practically increase the vulnerability of coastal regions to cyclones?
(A) By decreasing the average sea surface temperature
(B) By shifting the equator geographically
(C) By increasing temperatures and causing sea-level rise.
(D) By reducing the salinity of the Bay of Bengal
(E) Answer not known

140. Which specific feature identifies the advanced search and rescue capabilities of the NDRF?
(A) Use of dog squads, collapse search gear, and diving kits.
(B) Possession of nuclear weapons for deterrence
(C) Use of space shuttles for atmospheric evacuations
(D) Operation of submarine fleets for deep-sea mining
(E) Answer not known

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18. (C) Transitioning from reactive management to proactive risk reduction
To fulfill international commitments under the Sendai Framework, India focuses on shifting its strategy toward a more comprehensive approach. This involves moving away from simply reacting to disasters with relief funds and instead prioritizing proactive risk reduction and mitigation. Strengthening governance, investing in resilient infrastructure, and enhancing community preparedness are essential steps to reduce the long-term impact of various hazards.

19. (B) High vulnerability levels and high overall disaster risk
A city with poor drainage infrastructure is highly susceptible to the negative impacts of heavy rainfall. This lack of capacity to manage water flow increases vulnerability, which, when combined with the occurrence of a hazard, leads to a high level of disaster risk. Such conditions highlight how human-made factors and urban planning directly influence the severity of natural events.

20. (D) A primary triggering mechanism rooted in natural earth processes
The fundamental difference between natural calamities and man-made disasters lies in their origin. Natural events like earthquakes or floods are triggered by atmospheric, geological, or hydrological processes inherent to the planet. Man-made disasters result from human actions, such as industrial accidents or technological failures. Distinguishing these causes is vital for developing appropriate prevention, response, and specialized management strategies.

21. (A) I and II
Barren Island is recognized as the only confirmed active volcano in India and is situated in the Andaman Sea. While the Deccan Traps represent a massive volcanic formation, they were created by ancient fissure eruptions rather than recent explosive activity. Understanding these locations and histories is essential for geological research and monitoring potential volcanic hazards within the Indian territorial waters.

22. (C) I, II and III
The 2004 tsunami was a transoceanic disaster triggered by a massive undersea earthquake near Sumatra. It caused devastating impacts in several Indian coastal regions, particularly in the Nagapattinam district of Tamil Nadu. This catastrophic event led to the development of the Indian Tsunami Early Warning System, demonstrating a critical shift toward using technology for better coastal disaster preparedness.

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23. (A) I, II, IV and V
Tsunamis are powerful ocean waves generated by sudden displacements of water, often due to undersea earthquakes. In deep waters, they possess long wavelengths and move rapidly with low height. As they reach the coast, their height increases dramatically while their speed decreases. Regions like the Pacific Ring of Fire are particularly susceptible to these events due to frequent tectonic activity.

24. (A) Both A and R are true and R is the correct explanation of A.
The Pacific Ring of Fire is a major basin where a large number of earthquakes and volcanic eruptions occur. This intense activity is directly caused by the continuous subduction of tectonic plates around the margins of the Pacific Ocean. Because the geological reason provided accurately explains the observed seismic and volcanic frequency, both statements are true and logically linked.

25. (D) A is false but R is true.
Tsunami waves in the deep ocean are characterized by very low amplitudes and extremely long wavelengths, making them nearly unnoticeable to ships at sea. However, they travel at high speeds across vast distances. They only become dangerous and highly visible as they enter shallow coastal waters, where the wave energy is compressed, causing a significant and destructive increase in height.

26. (A) P-II, Q-I, R-IV, S-III
Effective tsunami preparedness involves a combination of technology and nature. Seismometers detect the initial earthquakes, while bottom pressure recorders monitor actual changes in sea level. Early warning systems are essential for disseminating alerts to the public, and coastal buffer zones, such as mangroves,

serve as physical barriers that absorb wave energy and reduce the overall impact on communities.

27. (A) P-III, Q-I, R-II, S-IV
Different regions of Tamil Nadu are susceptible to specific types of natural hazards. The 2004 tsunami primarily devastated coastal areas like Nagapattinam, while the 2015 floods severely impacted urban Chennai. Hilly regions such as the Nilgiris and Kodaikanal are prone to landslides during heavy rains, and areas like the Anamalai hills face risks from seasonal forest fires.

28. (B) Earth crust rupture - Deep ocean propagation - Wave shoaling - Inundation
A tsunami follows a specific physical progression from its origin to the shore. It begins with a sudden rupture of the Earth's crust on the ocean floor, followed by the rapid propagation of waves across the deep ocean. As waves approach shallow water, they undergo shoaling, where their height increases, finally resulting in the inundation of coastal land areas.

29. (A) IV, II, I, III
Tracking the timeline of cyclonic storms provides insights into weather patterns and state response evolution. Cyclone Vardah impacted the region in 2016, followed by Cyclone Gaja in 2018. Later, Cyclone Nivar made landfall in 2020, and Cyclone Mandous occurred in 2022. This chronological sequence is important for meteorological studies and for evaluating the effectiveness of consecutive disaster management efforts.

30. (B) Active Volcano - Barren Island
Volcanoes are categorized by their eruption history and current status. Barren Island is the only confirmed active volcano in India, having erupted in recent history. Other formations, like the Deccan Traps, are ancient and not currently active. Correctly identifying active sites is essential for maintaining geological surveillance and ensuring the safety of nearby regions from potential future volcanic activity.

31. (A) Trigger mechanism - Undersea volcanic eruption
The catastrophic 2004 Indian Ocean Tsunami was initiated by a massive undersea earthquake off the coast of Sumatra, Indonesia, rather than a volcanic eruption. This seismic event generated powerful waves that affected numerous countries, including India, where Nagapattinam was the hardest-hit district. Correcting misconceptions about the triggering mechanism is vital for understanding the true nature of transoceanic tsunami hazards.

32. (C) Ocean waves generated by massive displacements of the water column
A tsunami is scientifically defined as a series of ocean waves caused by a large-scale displacement of the water column. This displacement is typically triggered by undersea earthquakes, landslides, or occasionally volcanic eruptions. Unlike regular tides or storm surges, tsunamis involve the movement of the entire depth of the ocean, leading to significant energy transport and coastal impact.

33. (D) Andaman Sea
India's geological landscape includes an active volcanic site located within its island territories. Barren Island, the only confirmed active volcano in the country, is situated in the Andaman Sea. This location is part of a larger volcanic arc that is monitored for seismic and volcanic activity to provide early warnings and study the tectonic processes of the region.

34. (C) Indian Tsunami Early Warning Centre (ITEWC)
The devastating 2004 tsunami highlighted the need for a dedicated coastal monitoring system in India. As a result, the Indian Tsunami Early Warning Centre was established in Hyderabad. This facility uses a network of seismic stations and sea-level sensors to provide timely advisories, significantly enhancing the nation's ability to protect coastal populations from future tsunami threats.

35. (B) The state uses early warning systems and promotes mangrove buffer zones.
Tamil Nadu has implemented comprehensive measures to enhance coastal safety. The state integrates technological early warning systems with ecological solutions, such as the restoration of mangrove forests which act as natural shields against waves. This combined approach, involving both infrastructure and environmental protection, is essential for building long-term

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resilience against oceanic hazards and ensuring the safety of fishing communities.

36. (D) The distance between two successive tsunami wave crests in the open ocean is very short.
Tsunami waves possess unique physical characteristics that distinguish them from wind-driven waves. In the open ocean, they have extremely long wavelengths, meaning the distance between successive crests can span hundreds of kilometers. Describing this distance as very short is incorrect, as the long wavelength is exactly what allows tsunamis to travel across entire oceans with minimal loss of energy.

37. (A) Higher coastal vulnerability to storm surges and tsunami waves
Mangrove forests serve as vital natural barriers for coastal regions. Removing these buffer zones significantly increases the vulnerability of shorelines to the destructive forces of storm surges and tsunami waves. Without the protection of these ecosystems, the physical impact of water on inland communities is much more severe, highlighting the importance of ecological conservation in disaster risk management.

38. (C) Enforcing CRZ norms and restoring coastal bio-shields
Long-term mitigation of coastal hazards in Tamil Nadu requires sustainable planning and environmental protection. Enforcing Coastal Regulation Zone norms ensures that development is kept at a safe distance from the shoreline. Simultaneously, restoring natural bio-shields like mangroves and sand dunes provides an effective, permanent defense that absorbs wave energy, making it a more robust strategy than relying on relief.

39. (A) Absorbs wave energy and reduces inundation during tsunamis
Coastal buffer zones, including mangroves and dense vegetation, are essential for disaster risk reduction. These natural structures physically obstruct the flow of water, absorbing significant amounts of wave energy before it reaches human settlements. This process reduces the depth and extent of inundation during tsunamis and storm surges, effectively lowering the potential for loss of life and property damage.

40. (D) The Pacific Ring of Fire
The Pacific Ring of Fire is a major geographic feature characterized by intense tectonic activity. It contains most of the world's active volcanoes and is the site of the majority of the Earth's earthquakes. This high frequency of seismic events is directly responsible for the generation of numerous tsunamis in the Pacific Ocean, making it the most hazard-prone region globally.

41. (B) I and II
Tropical cyclone formation requires specific environmental conditions. A warm sea surface temperature of at least 27°C provides the necessary energy, while the Coriolis force is essential to initiate the rotation of the storm. However, cyclones do not form exactly at the equator because the Coriolis force is zero there, preventing the development of a organized cyclonic vortex.

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42. (C) I, II, III and IV
Tamil Nadu has faced several significant cyclonic storms in recent years, each affecting different regions. Vardah caused major damage in Chennai, while Gaja devastated the delta districts. More recently, Nivar and Mandous have also made landfall, demonstrating the state's high vulnerability to these weather systems. Each event has provided critical lessons for improving disaster preparedness and infrastructure resilience.

43. (D) I, II, III and IV
Cyclone preparedness in Tamil Nadu involves a multifaceted institutional approach. The State Disaster Management Authority coordinates activities including the construction of specialized shelters and the use of modern communication tools for warnings. These proactive measures, such as enforcing evacuation in low-lying areas, are essential components of a comprehensive strategy that spans from pre-disaster planning to long-term recovery and community safety.

44. (A) Both A and R are true and R is the correct explanation of A.
Historical data confirms that India's east coast experiences more cyclones than the west coast. This is primarily because the Bay of Bengal is relatively warmer and possesses atmospheric conditions that are more conducive to the

62. (A) I, II and III
The 2015 Chennai floods were triggered by extreme rainfall during the Northeast monsoon, but the impact was severely worsened by urban development over natural wetlands. This event exposed major flaws in the city's drainage and planning systems, leading to significant reforms in how urban stormwater is managed. Recognizing the human-induced factors is critical for preventing similar catastrophes in the future.

63. (A) I, II, III and V
Urban flooding is a complex issue driven by several factors, including the loss of open spaces due to concretization and the encroachment of natural water bodies. Outdated municipal drainage systems often become overwhelmed during heavy rains, leading to widespread inundation. Addressing these problems through better urban planning and regular maintenance of drainage infrastructure can significantly mitigate the risk and impact in major cities.

64. (A) Both A and R are true and R is the correct explanation of A.
Cities like Chennai and Mumbai face frequent urban flooding due to a combination of heavy rainfall and rapid, unplanned expansion. The loss of wetlands and natural drainage channels means that there is less capacity to absorb and move excess water. Because these urban development issues directly cause the increased frequency of flooding, both statements are true and the reason provided is correct.

65. (C) A is true but R is false.
National drought management guidelines focus heavily on monitoring meteorological indicators like rainfall deficits to provide early warnings. However, a meteorological drought does not always lead immediately to a socio-economic disaster. There is often a time lag, and the transition depends on other factors like irrigation capacity, stored water levels, and the resilience of the local economy and agricultural systems.

66. (A) P-I, Q-II, R-III, S-IV
Droughts are classified into different types based on their progression and impact. A meteorological drought starts with a rainfall deficit, which can lead to a hydrological drought as water resources deplete. Agricultural drought occurs when soil moisture is insufficient for crops, and socio-economic drought happens when water shortages affect the supply of essential goods and services, impacting the broader community.

67. (A) P-I, Q-II, R-III, S-IV
Floods are categorized by their specific causes and the environments where they occur. Flash floods happen quickly after intense rain, while riverine floods result from rivers overflowing their banks. Coastal floods are typically driven by oceanic events like storm surges, and urban floods are caused when municipal drainage systems fail to handle heavy precipitation. Correctly identifying the type is vital for response.

68. (A) Meteorological - Agricultural - Hydrological - Socio-economic
The progression of a drought usually follows a logical sequence starting with a significant deficit in precipitation. This lack of rain first impacts soil moisture, leading to agricultural stress. If the dry period continues, surface and groundwater levels begin to drop, causing hydrological issues. Eventually, these cumulative water shortages impact human activities and the economy, resulting in a socio-economic drought.

69. (A) I, II, III, IV
Vulnerability to chronic drought in India is largely determined by regional climate and geographical features. Rajasthan is the most chronically affected state due to its arid environment, followed by Gujarat and Maharashtra, which have large rain-shadow regions. Kerala, which receives high annual rainfall from both monsoons, is generally the least vulnerable among these states, though it still faces occasional localized water shortages.

70. (C) Flash Floods - Rapid onset in hilly or mountainous regions
Flash floods are characterized by their extremely rapid onset, often occurring within minutes or hours of intense localized rainfall. These events are particularly common in hilly or mountainous terrain where steep slopes cause water to accumulate and flow downward with great force. Identifying this characteristic is crucial for developing early warning systems that can provide enough time for people to seek higher ground.

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The India Meteorological Department serves as the regional specialized center that manages the list of names provided by member nations of the WMO/ESCAP panel. This structured system ensures that each significant storm is uniquely identified, which is crucial for public safety and international meteorological communication.

54. (C) The maximum sustained wind speed
The Saffir-Simpson Hurricane Wind Scale is a widely recognized tool for classifying the intensity of tropical storms. Its primary parameter for categorization is the maximum sustained wind speed of the storm. By focusing on wind velocity, the scale provides a clear indicator of the potential for structural damage and flooding, helping communities and emergency services prepare for the expected impact.

55. (A) The IMD is the nodal agency for providing cyclone warnings.
The India Meteorological Department is the primary national organization responsible for monitoring and forecasting cyclonic activity. As the nodal agency, it provides critical early warnings to government authorities and the general public. These warnings are essential for initiating timely evacuations and disaster response measures, highlighting the department's central role in the nation's disaster management framework for hydro-meteorological hazards.

56. (D) The Arabian Sea accounts for about 80% of all cyclonic storms hitting India.
Historical meteorological data indicates a significant disparity in cyclonic activity between the two major oceanic basins surrounding India. The Bay of Bengal is far more active, accounting for approximately 80% of the cyclonic storms that affect the country. Stating that the Arabian Sea holds this percentage is incorrect, as it is generally less prone to frequent and intense tropical cyclones.

57. (B) Strong vertical wind shear
Tropical cyclone development depends on several key environmental factors, such as high sea surface temperatures and the Coriolis force. However, strong vertical wind shear is actually a detrimental factor that inhibits formation. It disrupts the vertical structure of the storm by shifting the top of the system away from the bottom, preventing the organized intensification required to create a cyclone.

58. (C) Using multi-purpose shelters and conserving mangrove forests
Effective protection for coastal communities involves a mix of structural and environmental strategies. Constructing multi-purpose cyclone shelters provides safe havens for residents during landfalls, while conserving mangrove forests offers a natural defense against storm surges. This integrated proactive approach is more sustainable and effective than relying solely on post-disaster relief, as it significantly reduces the immediate risk to lives.

59. (D) Local mapping of low-lying areas and safe routes
Efficient evacuation during a cyclone depends on detailed local knowledge and pre-disaster planning. Identifying low-lying areas that are prone to inundation and mapping clear, safe routes to shelters ensures that the most vulnerable populations can be moved quickly. This targeted approach is a cornerstone of practical disaster management, as it facilitates organized movement and reduces the risk of casualties.

60. (A) A region of calm weather and lowest pressure at the center
The 'eye' is a unique structural feature found at the center of strong tropical cyclones. It is characterized by relatively calm weather, clear skies, and the lowest atmospheric pressure within the entire storm system. Surrounding the eye is the eyewall, where the most intense winds and heaviest rainfall occur, making the transition into and out of the eye extremely dangerous.

61. (B) I and II
Flooding is primarily caused by natural factors such as excessive rainfall and the silting of riverbeds, which reduces their capacity to hold water. Human activities also play a significant role, as deforestation and rapid urbanization increase surface runoff and worsen the severity of floods. Understanding both natural and anthropogenic contributors is essential for developing comprehensive flood management and mitigation strategies.

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address the need for a dedicated, highly trained body capable of responding to complex disasters. Since its inception, it has played a critical role in numerous rescue operations during floods, earthquakes, and other major calamities.

114. (A) The Prime Minister of India
The National Disaster Management Authority is the highest policy-making body for disaster management in India. To emphasize the importance of this sector, the Prime Minister serves as its ex-officio Chairperson. This leadership ensures that disaster management receives high-level political support and that policies are integrated into the nation's overall development and security agendas, facilitating rapid decision-making during major national crises.

115. (B) Specialized state-level force modeled on the national units.
Recognizing the need for rapid local response, many states have established their own State Disaster Response Forces. These units are modeled after the national response force and consist of specially trained personnel who can be deployed immediately within the state. This decentralized approach ensures that states have their own specialized assets for search and rescue, reducing the initial reliance on central forces.

116. (D) The DDMA is legally authorized to declare a national emergency.
The District Disaster Management Authority has extensive powers to manage local risks, including enforcing safety standards in construction. However, it does not have the legal authority to declare a national emergency, which is a power reserved for the central government under the Constitution. The authority's role is strictly focused on planning, coordinating, and implementing disaster management measures within its specific district.

117. (B) Directly executing rescue operations at every local village level
The national authority is responsible for high-level tasks such as laying down policies, approving the National Plan, and providing guidelines to state authorities. However, it is not designed to directly execute rescue operations at every small village level. Those localized operational tasks are the responsibility of the district and local authorities, supported by specialized response forces when the scale of the disaster requires it.

118. (C) A holistic shift from relief to proactive risk management
The most significant change brought by the 2005 Act was the paradigm shift in the nation's approach to disasters. Previously, the focus was primarily on providing relief after an event had occurred. The new framework emphasizes a holistic approach that prioritizes proactive risk management, mitigation, and preparedness, aiming to reduce the impact of disasters before they happen and building overall national resilience.

119. (C) Local communities and admin are the first responders.
Local-level response is considered the most critical phase because the people living in the affected area and the district administration are always the first to react. Their immediate actions in the minutes and hours following a disaster are often what determine the number of lives saved. Strengthening local capacity is therefore a primary objective of modern disaster management strategies in India.

120. (A) Trained in search, rescue, CBRN response, and diving.
The National Disaster Response Force maintains a specialized status by employing personnel trained in various rescue disciplines. This includes search and rescue in collapsed structures, response to Chemical, Biological, Radiological, and Nuclear (CBRN) incidents, and professional deep-sea diving. These diverse technical capabilities allow the force to handle a wide range of complex disaster scenarios that standard emergency services may not be equipped to manage.

121. (A) I and II
The Indian Tsunami Early Warning Centre is a state-of-the-art facility located in Hyderabad and operated by INCOIS. It is a critical component of the regional safety infrastructure, providing timely alerts not only for the Indian coastline but also for other countries in the Indian Ocean region. This collaborative international role highlights India's technological leadership in

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71. (A) Brahmaputra Valley (Assam) - Highly drought-prone
Regional hazard profiles in India vary significantly. While the Thar Desert and Vidarbha are well-known for being drought-prone, the Brahmaputra Valley in Assam is actually one of the most flood-prone regions in the country due to high rainfall and the river's massive discharge. Incorrectly labeling this valley as drought-prone ignores its primary environmental challenge, which is the management of excessive seasonal water.

72. (D) Depletion of surface and groundwater like rivers and lakes
A hydrological drought is specifically defined by a significant reduction in the availability of water in natural and man-made reservoirs. This includes declining levels in rivers, lakes, and underground aquifers. This stage of drought usually follows a prolonged period of meteorological drought and has serious implications for irrigation, industrial water use, and domestic supply, requiring careful management of stored water resources.

73. (B) Northeast Monsoon
The catastrophic urban flooding in Chennai in late 2015 occurred during the Northeast monsoon season. This period typically provides the majority of the state's annual rainfall, but that particular year saw unprecedented and extreme precipitation events. The intensity of the monsoon, combined with urban drainage issues, resulted in one of the worst disasters in the city's modern history, emphasizing seasonal vulnerability.

74. (C) Encroachment of marshlands and historical lakes
A major factor in the severity of the 2015 Chennai floods was the extensive encroachment upon natural water bodies. Marshlands and historical lakes that once acted as natural sponges and drainage basins had been built over due to rapid urbanization. This planning failure significantly reduced the city's capacity to absorb excess rainwater, leading to widespread and prolonged inundation during the monsoon.

75. (D) They mandate early warning systems and water conservation
National drought management guidelines provide a framework for reducing the impact of prolonged dry spells. They emphasize the importance of using scientific data for early warnings and promoting long-term water conservation practices. By focusing on preparedness and sustainable resource management, these guidelines aim to build resilience in vulnerable regions and prevent meteorological droughts from escalating into severe socio-economic crises.

76. (A) Urban flooding in India is solely caused by changes in global climate patterns.
While climate change contributes to more intense rainfall events, urban flooding in India is not caused by global patterns alone. Local anthropogenic factors, such as inadequate drainage systems, concretization of open land, and encroachment on floodplains, are critical drivers of this hazard. Attributing the problem solely to global climate changes neglects the vital role of local urban planning and maintenance.

77. (C) Excessive natural tectonic activity
Urban flooding is largely driven by human-induced factors that alter the natural hydrological cycle. Concretization, the loss of wetlands, and the clogging of drains with solid waste are all anthropogenic causes. In contrast, tectonic activity is a natural geological process that can cause earthquakes or tsunamis but is not a common or direct cause of the recurring urban flooding seen in major cities.

78. (B) Integrating wetlands and sustainable drainage in planning
The recurring urban floods in major Indian cities have provided critical lessons for future development. The most appropriate long-term strategy is to integrate natural wetlands into urban landscapes and design sustainable, high-capacity drainage systems. By preserving these natural water-holding areas and ensuring efficient runoff management, cities can become more resilient to extreme rainfall events and reduce the risk of future disasters.

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79. (A) Promoting crop diversification and micro-irrigation
Managing agricultural drought requires strategies that improve water-use efficiency and reduce crop vulnerability. Promoting the cultivation of less water-intensive crops and implementing micro-irrigation techniques like drip and sprinkler systems are highly effective measures. These proactive steps help ensure food security and protect the livelihoods of farmers even when rainfall is significantly below average, promoting sustainable agricultural practices in arid regions.

80. (C) A significant statistical deficit in regional rainfall
A meteorological drought is defined primarily by atmospheric conditions rather than the resulting impact on crops or water bodies. It is characterized by a significant and prolonged deficit in precipitation compared to the long-term statistical average for a specific region. Identifying this deficit early is the first step in the drought monitoring process, as it serves as a precursor to other types of drought.

81. (B) I and II
Landslides are a major hazard in the hilly regions of Tamil Nadu, particularly in the Nilgiris district. These events are often triggered by heavy monsoon rains and are exacerbated by human activities such as deforestation and unplanned construction on steep slopes. Understanding that these risks are seasonal and linked to both natural and human factors is essential for implementing effective mitigation and safety measures.

82. (B) I, II and III
Heat waves are extreme temperature events defined by specific thresholds for different terrains. In India, they are recognized when temperatures reach at least 40°C in the plains and 30°C in hilly regions, usually occurring between March and June. These events have significant impacts on human health and require active public awareness and cooling strategies to prevent heat-related illnesses and fatalities.

83. (D) I, II, III and IV
Forest fires are a recurring hazard in India, driven by both natural causes like lightning and human activities. In regions like the Anamalai and Nilgiris, the accumulation of highly combustible materials like pine needles increases the risk. Mitigation strategies include controlled burning to reduce fuel loads. While frequent in various forest types, they are not exclusively restricted to dense tropical evergreen forests.

84. (A) Both A and R are true and R is the correct explanation of A.
The Nilgiris and Kodaikanal are highly susceptible to landslides, especially during periods of intense rainfall. The combination of naturally steep slopes and the destabilizing effects of human activities like road widening and construction significantly increases this risk. Since the provided reason accurately describes the geological and anthropogenic factors causing these events, both statements are true and logically linked.

85. (A) Both A and R are true and R is the correct explanation of A.
Meteorological agencies use color-coded alerts to warn the public about the severity of approaching heat waves. This system is necessary because extreme heat can lead to fatal conditions such as heatstroke, particularly among vulnerable groups like the elderly and outdoor workers. The alerts serve as a critical communication tool that prompts health-related precautions, making the reason a valid explanation for the assertion.

86. (A) P-III, Q-II, R-I, S-IV
Different regions of Tamil Nadu are associated with specific natural and man-made hazards. The Nilgiris are highly prone to landslides, while coastal Nagapattinam frequently faces cyclonic impacts. Urban flooding is a major challenge in Chennai, and the Anamalai hills are a key area for monitoring forest fires. Correctly identifying these high-risk zones is fundamental for developing localized and effective disaster management plans.

87. (A) P-III, Q-I, R-II, S-IV
Weather anomalies result in diverse socio-economic and health impacts. Heat waves primarily cause medical issues like dehydration, while cold waves and frost can devastate high-altitude agriculture. Thunderstorms present a significant risk of fatal electrocution and fires, and flash floods are known for suddenly washing away infrastructure and property. Recognizing

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these specific impacts is essential for targeted emergency preparedness and public safety warnings.

88. (A) Pre-heating - Flaming combustion - Smoldering - Extinction
The progression of a forest fire follows a distinct physical cycle. It starts with the pre-heating of surrounding vegetation, followed by flaming combustion as the fire intensifies and spreads. As the fuel is consumed, the fire moves into a smoldering phase with less visible flame but continued heat. Finally, the fire reaches extinction when the fuel or oxygen is exhausted or suppressed.

89. (A) I, II, III, IV
Landslide vulnerability in Tamil Nadu is highest in the steep, high-altitude regions of the Nilgiris, followed by the hilly terrains of Kodaikanal in Dindigul and Valparai in Coimbatore. In contrast, flat coastal and delta districts like Thanjavur have minimal to no risk of landslides. This hierarchy is used by disaster management authorities to prioritize soil stabilization and monitoring efforts in the state.

90. (D) Kurangani hills fire (2018) - Theni district, Tamil Nadu
The 2018 Kurangani hills fire was a tragic event that occurred in the Theni district of Tamil Nadu, highlighting the dangers of forest fires to hikers and local ecosystems. While some forest fires are natural, many are caused by human negligence or activity. Understanding specific historical incidents like this helps in improving safety protocols for forest entry and enhancing the effectiveness of fire response strategies.

91. (D) Severe Heat Wave - Departure of 2°C to 3°C from normal
The classification of heat waves depends on the degree of temperature departure from the regional normal. While thresholds for plains and hills are correctly defined at 40°C and 30°C respectively, a “severe” heat wave is typically declared when the departure from normal is 6.4°C or more. A smaller departure of 2°C to 3°C does not meet the criteria for a severe heat wave.

92. (A) Maximum temperature reaches at least 37°C
In the coastal regions of India, the threshold for declaring a heat wave is lower than in the plains due to the added impact of high humidity. A heat wave is recognized when the maximum temperature reaches at least 37°C. This specific criteria accounts for the increased physiological stress caused by the combination of heat and moisture, which can be dangerous for residents.

93. (B) The interior and western ghats districts
Lightning and thunderstorms are frequent and dangerous events in Tamil Nadu, particularly during the transition between seasons. High instances are often recorded in the interior districts and along the Western Ghats, where the topography influences atmospheric instability. These regions require targeted public awareness campaigns and the installation of lightning arresters to reduce the number of annual fatalities caused by these events.

94. (D) Unregulated construction and slope modification
The increasing frequency of landslides in hilly regions like Kodaikanal is largely driven by human interventions. Unregulated construction and the modification of natural slopes for roads and buildings destabilize the soil and rock structures. When combined with heavy rainfall, these disturbed slopes are much more likely to fail, demonstrating how unsustainable urban expansion directly worsens the impact of natural geological hazards.

95. (A) Severe cold waves and frost damage high-altitude crops.
Cold waves and frost are significant hazards for agriculture in high-altitude regions such as the Nilgiris. These extreme temperature drops can cause the water inside plant cells to freeze and expand, leading to tissue rupture and widespread crop failure. Recognizing cold waves as a recognized natural hazard is essential for helping farmers implement protective measures like smoking or specialized irrigation to save harvests.

96. (C) Human interventions have successfully eliminated all landslide risks in Ooty.
Landslides in the Nilgiris remain a persistent threat due to the region’s weak geological structure and intense monsoon rainfall. While

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formation and intensification of tropical storms. Since the provided reason accurately describes the meteorological factors driving this disparity, both statements are true and logically linked.

45. (A) Both A and R are true and R is the correct explanation of A.
Naming tropical cyclones is a standardized practice managed by international meteorological bodies. This system is designed to provide clear and quick identification for each storm, which helps prevent confusion among the public and emergency responders. By enhancing awareness and simplifying communication, the naming convention directly improves the efficiency of disaster response efforts during severe weather events.

46. (A) P-III, Q-I, R-IV, S-II
Cyclonic events in the Bay of Bengal are tracked and recorded by year to analyze seasonal patterns. Vardah occurred in 2016, Gaja in 2018, and Nivar in 2020. Most recently, Mandous impacted the coast in 2022. Maintaining this chronological record is essential for meteorological research and for evaluating the effectiveness of disaster management strategies implemented by the state government over time.

47. (A) P-II, Q-III, R-I, S-IV
The Saffir-Simpson scale classifies tropical storms based on their sustained wind speeds and potential damage. A tropical depression is the weakest form, while Category 1 storms cause some damage. Intensity increases through Category 3, which brings devastating damage, to Category 5, which represents catastrophic destruction. This classification helps emergency managers and the public understand the severity of an approaching storm.

48. (A) Tropical Disturbance - Tropical Depression - Tropical Storm - Severe Cyclonic Storm
A tropical cyclone evolves through distinct developmental stages based on wind speed and organization. It begins as a tropical disturbance and progresses to a tropical depression as a low-pressure center forms. If the system intensifies further, it becomes a tropical storm and eventually a severe cyclonic storm. Understanding this sequence is vital for accurate meteorological forecasting and timely warnings.

49. (A) I, II, IV, III
Vulnerability to cyclones varies across Indian states based on their geographical location along the coastline. Historical records show that Odisha has the highest frequency of severe impacts, followed by Andhra Pradesh and West Bengal. Maharashtra, located on the west coast, generally experiences fewer and less intense cyclones compared to these eastern states, reflecting the differing meteorological conditions of the two basins.

50. (C) Naming Convention - WMO/ESCAP Panel contributions
The process of naming cyclones in the North Indian Ocean is coordinated by a specialized international panel. Member countries contribute names to a shared list, which is maintained by the World Meteorological Organization and the Economic and Social Commission for Asia and the Pacific. This collaborative approach ensures standardized identification of storms, facilitating better communication and coordination among the nations in the region.

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51. (B) Cyclone Mandous - Kanyakumari and Tirunelveli
Identifying the correct impact zones of recent cyclones is essential for assessing regional risks. While Gaja devastated the delta districts and Vardah hit Chennai, Cyclone Mandous primarily made landfall near Mamallapuram, affecting the northern coastal districts. Describing Mandous as having its primary impact in the southern districts of Kanyakumari and Tirunelveli is factually incorrect based on its recorded path.

52. (D) A low-pressure system with rapidly rotating winds and rain
In meteorology, a tropical cyclone is defined as a large-scale, low-pressure weather system that forms over warm tropical waters. It is characterized by a well-defined center and strong, rapidly rotating winds that bring intense rainfall. The energy for these storms is derived from the evaporation of warm ocean water, which then releases heat as it condenses into clouds.

53. (A) India Meteorological Department (IMD) / WMO Panel
The naming of tropical cyclones in the North Indian Ocean is a coordinated international effort.

105. (A) Both A and R are true and R is the correct explanation of A.
Strategically placing response force battalions near expected disaster zones, such as along a cyclone's predicted path, is a standard proactive measure. This pre-positioning allows for an immediate response once the event occurs, which is vital for saving lives during the critical initial hours. Since the benefit of reduced response time justifies the pre-positioning strategy, both statements are true and logically connected.

106. (A) P-I, Q-II, R-III, S-IV
The Disaster Management Act establishes a clear hierarchical leadership structure. The Prime Minister leads the national authority, while Chief Ministers head the state-level bodies. At the local level, the District Magistrate or Collector serves as the chairperson. Additionally, the National Executive Committee, which assists the national authority, is chaired by the Union Home Secretary, ensuring coordination across different administrative levels.

107. (A) P-I, Q-II, R-III, S-IV
Specialized agencies and forces are assigned distinct roles within the disaster management framework. The national and state response forces handle search and rescue operations at their respective levels. Meanwhile, the Indian Tsunami Early Warning Centre focuses on oceanic advisories, and the India Meteorological Department provides forecasts for weather-related hazards. This division of labor ensures that expert knowledge is applied to every type of disaster.

108. (A) NDMA - SDMA - DDMA - Local Authorities
India's disaster management system follows a structured hierarchy that ensures coordination from the top levels of government down to the community. It starts with the National Disaster Management Authority at the apex, followed by the State and District authorities. This vertical integration allows for the efficient flow of policies, resources, and instructions, ensuring that local authorities can act effectively during emergencies.

109. (A) IV, I, III, II
The evolution of India's disaster management institutions was significantly influenced by major events and international agreements. The process began with the 2004 tsunami, which prompted the enactment of the Disaster Management Act in 2005. Later, India adopted the Sendai Framework in 2015, which led to the release of the comprehensive National Disaster Management Plan in 2016, marking a complete institutional transition.

110. (A) Section 3 - Establishment of NDMA
The Disaster Management Act of 2005 contains specific provisions that provide the legal basis for the nation's institutional framework. Section 3 is particularly important as it mandates the establishment of the National Disaster Management Authority. This legal foundation ensures that disaster management is a mandatory function of the state and provides a clear structure for governance, policy-making, and specialized response operations.

111. (D) NEC Chairperson - Minister of Defence
The institutional framework in India specifies clear leadership roles for coordination. The National Executive Committee serves as the executive body for the national authority and is chaired by the Union Home Secretary, not the Minister of Defence. This administrative structure ensures that disaster management remains integrated within the ministry responsible for internal security and domestic crisis coordination across all states and territories.

112. (A) Assisting the SDMA and coordinating performance action
The State Executive Committee plays a vital administrative role by supporting the State Disaster Management Authority. Its primary functions include coordinating the implementation of disaster management plans and ensuring that different government departments work together effectively. This committee acts as the operational arm of the state authority, facilitating the performance of various tasks related to mitigation, preparedness, response, and long-term recovery.

113. (B) 2006
Following the enactment of the Disaster Management Act in late 2005, the National Disaster Response Force was formally constituted in 2006. This specialized force was created to

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zonation mapping and engineering measures help manage the risk, it is factually incorrect to state that human interventions have completely eliminated all landslide risks in Ooty. Continuous monitoring and sustainable land-use practices are still required to safeguard the population and the environment.

97. (C) Groundwater extraction in flat desert plains
Landslides are mass movements of rock or soil down a slope, typically triggered by rainfall, seismic activity, or human-induced slope modification. While groundwater extraction can cause land subsidence in flat plains, it is not a primary cause of landslides, which require a topographical incline. Understanding the specific physical requirements for different types of ground failure is essential for accurate hazard assessment and mitigation.

98. (B) Using lightning arresters and seeking indoor shelter
Protecting communities from lightning strikes requires both structural measures and behavioral changes. The use of lightning arresters on buildings provides a safe path for electrical discharges, while seeking indoor shelter away from windows and electrical appliances significantly reduces individual risk. Avoiding tall, isolated trees and open water during thunderstorms is also critical, as these are high-risk areas for strikes during atmospheric electrical activity.

99. (B) It causes plant cell water to freeze and rupture tissues.
Prolonged frost has a devastating biological impact on crops in high-altitude areas. When temperatures drop below freezing, the water within plant cells turns into ice. This expansion causes the cell walls to rupture, leading to tissue death and the loss of agricultural output. This process is a major concern for tea and potato farmers in regions like the Nilgiris during the winter months.

100. (D) Steep slopes, weak geology, and high rainfall
Identifying areas at risk for landslides involves analyzing several key physical factors. The combination of steep terrain, inherently weak or weathered geological structures, and the presence of high annual rainfall creates the perfect conditions for slope failure. Landslide zonation mapping uses these features to categorize land and guide safer urban development and infrastructure planning in vulnerable mountainous or hilly regions.

101. (A) I and II
The Disaster Management Act of 2005 revolutionized the institutional framework in India by mandating the creation of specialized authorities at the national and state levels. This includes the National Disaster Management Authority and State Disaster Management Authorities. However, the Act did not abolish the role of District Magistrates; instead, it integrated them into the system as the chairpersons of local authorities.

102. (A) I, II and III
The National Disaster Response Force was created under the 2005 Act to provide a specialized, multi-disciplinary response to disasters. Its battalions are composed of personnel from the Central Armed Police Forces who are trained in advanced rescue techniques. The force operates primarily within India to manage domestic crises, though it may also be deployed internationally for humanitarian assistance missions when required.

103. (A) I, II, III and IV
Every state in India, including Tamil Nadu, has established a State Disaster Management Authority as required by law. These bodies are led by the Chief Minister and are responsible for setting policies and approving state-level disaster plans. While they focus on regional needs, they must still operate within the general guidelines provided by the national authority to ensure a coordinated countrywide response.

104. (A) Both A and R are true and R is the correct explanation of A.
The District Disaster Management Authority is the essential link between national policies and local implementation. Because most disasters are localized events, the district administration is always the first responder. Providing the District Magistrate with the authority to coordinate local efforts is a logical necessity, making both statements true and ensuring that the reason correctly explains the administrative structure.

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oceanic hazard monitoring and disaster risk reduction.

122. (A) I, II and III
The National Disaster Management Plan of 2016 provides a comprehensive roadmap for managing various types of hazards. It is strictly aligned with the Sendai Framework's global goals and covers all phases of the disaster cycle. By providing a framework for coordination between different agencies and levels of government, it ensures that disaster management is a shared responsibility rather than the duty of only one entity.

123. (A) I, II, III and V
Rebuilding after a disaster provides a unique opportunity to reduce future risks. The 'Build Back Better' concept focuses on improving structural integrity and integrating climate adaptation into recovery. It also emphasizes the importance of restoring livelihoods and involving the local community. It does not mean rebuilding structures exactly as they were, as that would simply recreate the same vulnerabilities that led to the initial damage.

124. (A) Both A and R are true and R is the correct explanation of A.
The Pradhan Mantri Fasal Bima Yojana is an essential tool for managing agricultural disaster risks. By providing financial support and insurance coverage to farmers when crops fail due to natural calamities, it helps stabilize their income and ensures continued agricultural activity. Since the insurance mechanism described in the reason is exactly how the scheme provides risk financing, both statements are true and logically linked.

125. (A) Both A and R are true and R is the correct explanation of A.
Scientific evidence shows that hydro-meteorological disasters are becoming more frequent and severe. This trend is directly linked to human-induced climate change, which increases ocean temperatures and alters atmospheric patterns, leading to more intense cyclones and extreme rainfall. Because international scientific research provides the underlying cause for the observed increase in hazards, both statements are true and the reason correctly explains the assertion.

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126. (A) P-I, Q-II, R-III, S-IV
Different nodal agencies in India are responsible for monitoring specific hazards. The IMD handles weather and cyclones, while INCOIS monitors tsunamis and ocean states. The Central Water Commission provides flood forecasts for major river basins, and the Forest Survey of India issues alerts for forest fires. This specialized division ensures that each hazard is monitored by the organization with the most appropriate technical expertise.

127. (A) P-I, Q-II, R-III, S-IV
The disaster management cycle consists of several distinct phases, each with specific goals. Mitigation involves structural changes like building earthquake-resistant houses, while preparedness focuses on drills and stockpiling. Response is the immediate action taken during a disaster, such as search and rescue. Finally, recovery involves rebuilding in a way that reduces future risks, often through programs that emphasize building back better.

128. (A) Mitigation - Preparedness - Response - Recovery
The standard disaster management cycle is a continuous process that guides actions before, during, and after a calamity. It begins with mitigation to reduce long-term risks, followed by preparedness to ensure a rapid response. After a disaster occurs, the response phase addresses immediate needs, leading finally to the recovery phase where communities rebuild and strengthen their resilience for the next potential event.

129. (A) I, II, III, IV
A successful early warning system relies on a clear and logical chain of events. It starts with the detection of a physical anomaly by monitoring equipment. This data is then analyzed by a nodal agency to generate an official warning, which is disseminated to local administrators. Finally, this information allows for the organized evacuation of the community, ensuring that lives are protected.

130. (A) PMFBY - Crop insurance against natural calamities
Disaster risk financing is a critical part of a comprehensive management strategy. The Pradhan Mantri Fasal Bima Yojana is a prime

example, providing insurance to protect farmers from the financial losses caused by natural disasters. Other funds like the SDRF and NDRF are government-managed resources designed to support state and national-level response and relief efforts, rather than for industrial expansion or international management.

131. (B) Sea Level Rise - Reduced coastal city vulnerability
Climate change poses significant challenges to disaster management. While it is correctly linked to global warming and more intense storms, stating that sea level rise reduces coastal city vulnerability is factually incorrect. In reality, rising seas increase the risk of flooding and storm surges for coastal populations. Correctly understanding these impacts is vital for planning effective climate adaptation and long-term coastal protection strategies.

132. (A) Systematic vulnerability reduction during reconstruction.
The core philosophy of 'Build Back Better' is to use the reconstruction phase as a way to make communities more resilient than they were before the disaster. This involves systematically identifying and reducing the vulnerabilities that caused the damage in the first place. By improving infrastructure and socio-economic conditions during the recovery process, the long-term impact of future hazards can be significantly minimized.

133. (C) Hyderabad
The Indian Tsunami Early Warning Centre is a specialized national facility located in Hyderabad. It serves as the central hub for monitoring seismic activity and sea-level changes in the Indian Ocean. By providing timely advisories and warnings to coastal states and international partners, the center plays a vital role in the global network of ocean safety and national disaster preparedness.

134. (C) India Meteorological Department (IMD)
The India Meteorological Department is the official nodal agency responsible for forecasting and issuing warnings for cyclonic storms in India. It uses a network of satellites, radars, and weather stations to monitor the development of tropical systems. Providing accurate and timely cyclone alerts is a key part of its mission, ensuring that authorities and the public have enough time to prepare.

135. (C) SDRF is the primary response fund for State Governments.
The State Disaster Response Fund is the essential financial resource that allows state governments to respond immediately to calamities. It is funded by both the central and state governments according to specific ratios. While the NDRF provides additional support for disasters of a severe nature, the SDRF remains the first line of financial defense for states to manage search, rescue, and relief.

136. (C) Community participation is discouraged as it slows down professional response operations.
Community-level preparedness is a cornerstone of modern disaster management. Mock drills and educational programs help residents understand how to act as first responders, which is vital since they are already on the scene. Stating that community participation is discouraged is incorrect; on the contrary, involving local people is actively promoted as it bridges the gap until professional forces can arrive.

137. (D) Privatizing all national disaster response forces
The National Disaster Management Plan of 2016 aims to improve risk understanding, strengthen governance, and invest in resilience. These objectives are designed to build a more disaster-resilient nation through government-led coordination. Privatizing the national response forces is not a recognized goal of the plan, as these specialized units remain a critical public service provided by the state to ensure national safety.

138. (B) Centralized coordination of NGO efforts by district admin.
Non-governmental organizations provide valuable support during post-disaster rehabilitation, but their efforts must be well-coordinated to avoid duplication and gaps. The most effective strategy is to have these organizations work under the centralized coordination of the district administration. This ensures that resources are allocated based on actual needs and that all

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relief and recovery activities are aligned with the official state disaster plan.

139. (C) By increasing temperatures and causing sea-level rise.
Climate change increases the vulnerability of coastal areas through two primary mechanisms. Rising sea surface temperatures provide more energy for cyclonic storms, making them more intense. Simultaneously, sea-level rise means that storm surges can reach further inland, causing greater inundation. Understanding these physical changes is essential for developing long-term adaptation strategies that protect coastal communities from the growing threats posed by global warming.

140. (A) Use of dog squads, collapse search gear, and diving kits.
The National Disaster Response Force maintains a specialized status by employing advanced tools for various emergencies. Personnel utilize trained dog squads for locating victims under debris, specialized gear for structural collapse search, and professional diving kits for aquatic rescues. These technical capabilities distinguish the force as a premier multidisciplinary body capable of managing diverse and complex disaster scenarios effectively across the country.

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correct?
(A) I and II
(B) I and III
(C) II and III
(D) II only
(E) Answer not known

28. Which of the following is an exception to the causes of Thermal Pollution?
(A) Use of water as a coolant by power plants
(B) Discharge of municipal sewage rich in heavy metals
(C) Deforestation along river banks leading to direct sunlight exposure
(D) Discharge of cold water from the hypolimnion of a reservoir
(E) Answer not known

29. Select the correct sequence of the steps involved in an Environmental Impact Assessment (EIA) process in India.
(A) Screening, Scoping, Public Consultation, Appraisal
(B) Scoping, Screening, Public Consultation, Appraisal
(C) Appraisal, Screening, Scoping, Public Consultation
(D) Screening, Public Consultation, Scoping, Appraisal
(E) Answer not known

30. Which is the most appropriate description of the 'Polluter Pays Principle'?
(A) Government compensation for victims using general tax revenues.
(B) Citizens paying municipal taxes for basic waste clearance services.
(C) The entity causing pollution bears management and prevention costs.
(D) Industries are permitted to pollute upon paying a fixed annual penalty.
(E) Answer not known

31. The following question consists of two statements, one labelled as Assertion (A) and the other as Reason (R). Select the correct answer using the codes given below.
Assertion (A): The establishment of Zero Liquid Discharge (ZLD) systems is mandated for highly polluting industries like tanneries in certain regions of India.
Reason (R): ZLD systems completely eliminate the release of liquid effluent into surface waters by recovering and reusing water.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

32. The process of using engineered wetlands to naturally filter industrial effluents before they reach river bodies is an application of:
(A) Bioremediation
(B) Thermal desorption
(C) Phytoremediation
(D) Biomagnification
(E) Answer not known

33. Match the specific pollution-related case studies in List I with their corresponding locations in List II.
List I: (Case Studies)
P. Severe chromium contamination of groundwater
Q. Dyeing and bleaching unit pollution in the Noyyal basin
R. Industrial corridor expansion and environmental clearance disputes
S. Oil spill impacting marine ecology and coastal livelihoods
List II: (Locations)
I. Ennore
II. Vellore
III. Tirupur
IV. SIPCOT industrial parks
(A) P-II, Q-III, R-IV, S-I
(B) P-III, Q-II, R-I, S-IV
(C) P-II, Q-IV, R-III, S-I
(D) P-IV, Q-III, R-II, S-I
(E) Answer not known

34. Which of the following is classified under the Red category of industries by the Tamil Nadu Pollution Control Board (TNPCB)?
(A) Handloom weaving without dyeing
(B) Assembly of electrical components
(C) Cotton spinning mills without wet processing
(D) Large-scale leather tanning and processing

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major air pollutants.
(C) An AQI value between 0-50 is classified specifically as 'Good'.
(D) Carbon dioxide is a primary pollutant measured for AQI.
(E) Answer not known

7. Consider the following statements regarding Vehicular Pollution and BS VI norms:
I. BS VI norms strictly limit the sulphur content in vehicular fuel to 10 ppm.
II. Selective Catalytic Reduction (SCR) technology is mandated to control particulate matter.
III. BS VI norms were implemented directly by skipping the BS V stage in India.
Which of the statement(s) given above is/are correct?
(A) I and III
(B) II and III
(C) I and II
(D) II only
(E) Answer not known

8. Which of the following is an exception to the common sources of indoor air pollution in rural households?
(A) Biomass burning for cooking
(B) Unvented kerosene heaters
(C) Photochemical smog infiltration
(D) Volatile Organic Compounds (VOCs) from paints and varnishes
(E) Answer not known

9. Select the correct sequence of Air Quality Index (AQI) categories in India, arranged in increasing order of health concern.
(A) Satisfactory, Good, Moderate, Poor, Severe, Very Poor
(B) Good, Satisfactory, Moderate, Poor, Very Poor, Severe
(C) Good, Moderate, Satisfactory, Poor, Severe, Very Poor
(D) Satisfactory, Moderate, Good, Very Poor, Poor, Severe
(E) Answer not known

10. Which is the most appropriate primary objective of the Pradhan Mantri Ujjwala Yojana in the context of environmental health?
(A) To reduce indoor pollution by replacing biomass with LPG.
(B) To provide subsidized solar power and reduce lamp reliance.
(C) To mandate installation of solar cookers in BPL households.
(D) To distribute improved smokeless wood-burning chulha units.
(E) Answer not known

11. The following question consists of two statements, one labelled as Assertion (A) and the other as Reason (R). Select the correct answer using the codes given below.
Assertion (A): Photochemical smog is primarily formed during cold, winter mornings in the presence of fog.
Reason (R): It requires the interaction of ultraviolet sunlight with nitrogen oxides and volatile organic compounds.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

12. The phenomenon where the pH of rainwater drops below 5.6 due to the dissolution of atmospheric SO2 and NOx is a concept associated with:
(A) Ocean acidification
(B) Acid rain
(C) Thermal inversion
(D) Photochemical smog
(E) Answer not known

13. Match the air pollution control measures in List I with their primary applications in List II.
List I: (Control Measures)
P. Electrostatic Precipitator
Q. Wet Scrubber
R. Catalytic Converter
S. Baghouse Filter
List II: (Applications)
I. Removes gaseous pollutants like SO2 from industrial exhaust
II. Reduces NOx, CO, and hydrocarbons from automobile exhaust
III. Captures fine particulate matter using electrical charges

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IV. Traps dust particles using fabric bags in industries
(A) P-III, Q-I, R-II, S-IV
(B) P-I, Q-III, R-IV, S-II
(C) P-III, Q-IV, R-I, S-II
(D) P-II, Q-I, R-III, S-IV
(E) Answer not known

14. Which of the following represents a non-point source of water pollution?
(A) Discharge from a municipal sewage treatment plant
(B) Industrial effluent released from a tanning factory
(C) Agricultural runoff carrying fertilizers into a river
(D) Oil leakage from an identified sunken tanker
(E) Answer not known

15. Identify the incorrectly matched pair regarding the major rivers of India and their primary pollution sources.
(A) Ganga — Pollutants from various Kanpur tanneries
(B) Noyyal — Dyeing and bleaching unit industrial waste
(C) Damodar — Coal washing and mining area discharges
(D) Yamuna — Eutrophication from Delhi's farm runoff
(E) Answer not known

16. The widespread pollution of the Noyyal river is primarily characterized by the presence of:
(A) Toxic heavy metals from unregulated electronic waste dumping.
(B) Dangerous radioactive waste from nearby nuclear power plants.
(C) High levels of dissolved solids and chemical dyes.
(D) Untreated hazardous biomedical waste from regional hospitals.
(E) Answer not known

17. Consider the following statements regarding Groundwater pollution:
I. High fluoride concentration causes skeletal fluorosis.
II. Arsenic contamination is primarily a result of excessive pesticide use.
III. Nitrate contamination in groundwater can lead to Blue Baby Syndrome.
IV. Coastal aquifers are vulnerable to saltwater intrusion due to over-extraction.
Which of the statement(s) given above is/are correct?
(A) I, II and IV
(B) I, III and IV
(C) II and III
(D) I and IV
(E) Answer not known

18. The Ennore oil spill of 2017 off the Kamarajar Port was primarily caused by:
(A) Sudden rupture of an aging underwater crude oil pipeline.
(B) Illegal discharge of ballast water by a passing oil tanker.
(C) A catastrophic blowout at an offshore oil drilling rig.
(D) Collision between cargo vessels Dawn Kanchipuram and BW Maple.
(E) Answer not known

19. Arrange the following legal interventions and regulations concerning pollution in chronological order of their enactment.
I. Environment Protection Act
II. Water (Prevention and Control of Pollution) Act
III. E-Waste (Management) Rules (First enactment)
IV. Noise Pollution (Regulation and Control) Rules
(A) II, I, IV, III
(B) I, II, III, IV
(C) II, IV, I, III
(D) I, IV, II, III
(E) Answer not known

20. Consider the following statements regarding Soil remediation methods:
I. Bioremediation uses microorganisms to degrade environmental contaminants.
II. Phytoremediation utilizes plants to remove or neutralize pollutants from the soil.
III. Physical remediation always involves the biological breakdown of heavy metals.
IV. Thermal desorption is a physical method used to remove volatile organic compounds.
V. Composting is purely a physical remediation

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method with no biological activity.

Which of the statement(s) given above is/are incorrect?

(A) I, II, III and IV
(B) II, III, IV and V
(C) III and V
(D) I and IV
(E) Answer not known

21. The following question consists of two statements, one labelled as Assertion (A) and the other as Reason (R). Select the correct answer using the codes given below.

Assertion (A): The Central Pollution Control Board (CPCB) prescribes a daytime permissible noise limit of 55 dB for residential areas.

Reason (R): Continuous exposure to noise levels above 85 dB can cause permanent sensorineural hearing loss.

(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

22. According to the Noise Pollution (Regulation and Control) Rules, 2000, 'night time' is legally defined as the period between:

(A) 9.00 p.m. and 6.00 a.m.
(B) 11.00 p.m. and 5.00 a.m.
(C) 10.00 p.m. and 7.00 a.m.
(D) 10.00 p.m. and 6.00 a.m.
(E) Answer not known

23. Match the hazardous components commonly found in E-waste in List I with their primary source device in List II.

List I: (Hazardous Components)
P. Lead
Q. Mercury
R. Cadmium
S. Beryllium

List II: (Source Devices)
I. Rechargeable batteries
II. Motherboards and connectors
III. Cathode Ray Tube (CRT) monitors
IV. Fluorescent lamps in flat-screen monitors

(A) P-III, Q-IV, R-I, S-II
(B) P-IV, Q-III, R-II, S-I
(C) P-III, Q-I, R-IV, S-II
(D) P-I, Q-IV, R-II, S-III
(E) Answer not known

24. Which of the following statements correctly defines Extended Producer Responsibility (EPR) under the E-waste Management Rules?

(A) Financial burden shift from consumers to the local municipality.
(B) Carbon tax payment based on waste volume generated by consumers.
(C) Producer responsibility for sound management until end-of-life.
(D) Producer liability limited strictly to the product warranty period.
(E) Answer not known

25. Identify the correctly matched pair regarding the ecological impacts of plastic pollution.

(A) Microplastics — Soil enrichment and increased porosity
(B) Biomagnification — Decreasing concentration of plastic toxins in apex predators
(C) Great Pacific Garbage Patch — Accumulation of biodegradable marine debris
(D) Ghost fishing — Marine animals entangled in abandoned plastic fishing nets
(E) Answer not known

26. Identify the incorrect statement regarding the Single-Use Plastic ban in India.

(A) Complete ban on multi-layered packaging for all essential food.
(B) Ban on balloon sticks, plastic flags, and thermocol decoration.
(C) Strict prohibition of polythene bags under 120 microns thickness.
(D) Phased nationwide implementation starting from July 1, 2022.
(E) Answer not known

27. Consider the following statements regarding Light pollution:

I. Skyglow obscures the view of the night sky.
II. It enhances the nesting behavior of sea turtles on beaches.
III. It disrupts the navigational abilities of migratory birds.

Which of the statement(s) given above is/are

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CHAPTER 11

Environmental Pollution and Preventive Measures

1. The following question consists of two statements, one labelled as Assertion (A) and the other as Reason (R). Select the correct answer using the codes given below.
Assertion (A): The physical, chemical, and biological components of the environment are inherently dynamic and continually interact to sustain human survival.
Reason (R): Environmental degradation is always completely reversible if anthropogenic interference is immediately halted.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

2. Which of the following pollutants is strictly classified as a secondary air pollutant?
(A) Carbon monoxide
(B) Sulphur dioxide
(C) Particulate Matter 10
(D) Ground-level ozone
(E) Answer not known

3. Match the major air pollutants in List I with their predominant anthropogenic sources in List II.
List I: (Pollutants)
P. Sulphur dioxide (SO2)
Q. Nitrogen oxides (NOx)
R. Chlorofluorocarbons (CFCs)
S. Carbon monoxide (CO)
List II: (Sources)
I. Incomplete combustion of fossil fuels in vehicles
II. Refrigeration and aerosol propellants
III. Coal-based thermal power plants
IV. High-temperature combustion in automobile engines
(A) P-III, Q-IV, R-II, S-I
(B) P-IV, Q-III, R-I, S-II
(C) P-III, Q-I, R-IV, S-II
(D) P-I, Q-IV, R-II, S-III
(E) Answer not known

4. Which of the following statements correctly describes the difference between PM 2.5 and PM 10?
(A) PM 2.5 particles are visible to the naked eye, whereas PM 10 particles are microscopic.
(B) PM 10 is predominantly formed by chemical reactions in the atmosphere, whereas PM 2.5 is exclusively mechanically generated dust.
(C) PM 2.5 can penetrate deep into the alveolar region of the lungs, while PM 10 is largely filtered in the upper respiratory tract.
(D) Only PM 10 is regulated under the National Ambient Air Quality Standards (NAAQS), while PM 2.5 is not.
(E) Answer not known

5. Identify the correctly matched pair regarding the health effects of specific air pollutants.
(A) Carbon monoxide — Reduces blood oxygen-carrying capacity
(B) Lead — Causes methemoglobinemia or blue baby syndrome
(C) Nitrogen dioxide — Leads to bone softening and osteoporosis
(D) Ozone — Triggers mercury-linked Minamata disease illness
(E) Answer not known

6. Identify the incorrect statement regarding the Air Quality Index (AQI) in India.
(A) Transforms complex data of multiple pollutants into one number.
(B) Indian AQI calculation considers eight

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(E) Answer not known

35. Identify the incorrectly matched pair regarding the colour-coded bags for Bio-medical waste management.
(A) Blue Cardboard Box — Radioactive hospital waste
(B) Yellow Bag — Human anatomical waste and soiled cotton
(C) Red Bag — Contaminated recyclable plastic waste like syringes and IV tubes
(D) White (Translucent) Container — Waste sharps including needles and blades
(E) Answer not known

36. One of the defining features of the National Green Tribunal (NGT) Act, 2010 is that it:
(A) Requires cases to be disposed of within ten years of filing.
(B) Operates bound strictly by the procedures laid down in the Code of Civil Procedure, 1908.
(C) Is guided by the principles of natural justice rather than strict civil procedure.
(D) Does not have the power to order compensation for victims of pollution.
(E) Answer not known

37. Consider the following statements regarding the Swachh Bharat Mission (SBM):
I. It aims to achieve Open Defecation Free (ODF) status for all statutory towns.
II. SBM completely ignores the solid waste management component in urban areas.
III. SBM (Gramin) focuses on liquid waste management in rural areas.
IV. The mission was launched precisely on the 150th birth anniversary of Mahatma Gandhi.
Which of the statement(s) given above is/are correct?
(A) I, II and IV
(B) I, III and IV
(C) I and III
(D) II and IV
(E) Answer not known

38. The landmark case "Vellore Citizens Welfare Forum vs. Union of India" is primarily remembered for integrating which key principle into Indian environmental jurisprudence?
(A) Public Trust Doctrine
(B) Absolute Liability
(C) Environmental Impact Assessment necessity for highways
(D) The Precautionary Principle and Sustainable Development
(E) Answer not known

39. Arrange the following landmark legal and regulatory developments in India in chronological order.
I. Environment (Protection) Act
II. Establishment of the National Green Tribunal
III. Stockholm Conference on Human Environment
IV. Swachh Bharat Mission launch
(A) III, I, II, IV
(B) I, III, II, IV
(C) III, II, I, IV
(D) I, II, III, IV
(E) Answer not known

40. Consider the following statements regarding SIPCOT industrial corridors:
I. SIPCOT was established to act as a nodal agency for industrial development.
II. All SIPCOT projects are strictly exempt from Environmental Impact Assessment (EIA) norms.
III. SIPCOT complexes have faced public hearings related to groundwater depletion.
IV. They provide specialized infrastructure like common effluent treatment plants (CETP).
V. SIPCOT operations are governed entirely by the central government, bypassing state pollution norms.
Which of the statement(s) given above is/are incorrect?
(A) I, III, IV and V
(B) II, IV, V and I
(C) I, III and IV
(D) II and V
(E) Answer not known

41. The following question consists of two statements, one labelled as Assertion (A) and the other as Reason (R). Select the correct answer using the codes given below.
Assertion (A): The ozone layer in the stratosphere protects terrestrial life from

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harmful UV radiation, but ground-level ozone is a severe respiratory irritant.
Reason (R): Ground-level ozone is formed naturally by the breakdown of stratospheric ozone during heavy rainfall.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

42. In the context of environmental legislation, what was the immediate background that catalyzed the enactment of the Environment (Protection) Act, 1986?
(A) The Bhopal Gas Tragedy of 1984
(B) The Stockholm Conference of 1972
(C) The Ennore Oil Spill of 2017
(D) The Rio Earth Summit of 1992
(E) Answer not known

43. Match the physical layers of the atmosphere in List I with their environmental significance in List II.
List I: (Atmospheric Layers)
P. Troposphere
Q. Stratosphere
R. Mesosphere
S. Thermosphere
List II: (Significance)
I. Contains the protective ozone layer
II. Region where meteorological phenomena and smog formation occur
III. Absorbs high-energy X-rays and UV radiation; contains the ionosphere
IV. Coldest layer where most meteors burn up
(A) P-II, Q-I, R-IV, S-III
(B) P-I, Q-II, R-III, S-IV
(C) P-II, Q-IV, R-I, S-III
(D) P-III, Q-I, R-IV, S-II
(E) Answer not known

44. Which of the following statements correctly highlights the purpose of the National Ambient Air Quality Standards (NAAQS)?
(A) Provides guidelines for carbon trading among Indian industries.
(B) Sets legal limits on 12 air pollutants to protect public health.
(C) Regulates indoor air quality within large commercial buildings.
(D) Determines emission limits for all newly manufactured vehicles.
(E) Answer not known

45. Identify the correctly matched pair regarding water pollution indicators.
(A) BOD — Oxygen required by bacteria to decompose organic matter.
(B) COD — Measures the exact count of coliform bacteria in water.
(C) DO — High levels indicating the presence of severe pollution.
(D) Eutrophication — Oligotrophic lakes with very low nutrient content.
(E) Answer not known

46. Identify the incorrect statement regarding the handling of municipal solid waste by urban corporations.
(A) Source segregation into biodegradable and non-biodegradable waste is mandatory.
(B) Biomining has been initiated at legacy dump yards like Perungudi and Kodungaiyur.
(C) The entire solid waste generated in Chennai is incinerated for power generation.
(D) Micro-composting centers have been established for decentralized waste management.
(E) Answer not known

47. Consider the following statements regarding the Water (Prevention and Control of Pollution) Act, 1974:
I. It resulted in the creation of the Central and State Pollution Control Boards.
II. It applies only to surface water bodies, explicitly excluding groundwater.
III. It prohibits the disposal of poisonous, noxious, or polluting matter into streams.
Which of the statement(s) given above is/are correct?
(A) I and II
(B) II and III
(C) I and III
(D) I only
(E) Answer not known

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48. Which of the following is an exception to the biological agents used in the bioremediation of oil spills?
(A) Pseudomonas putida
(B) Alcanivorax borkumensis
(C) Eichhornia crassipes (Water hyacinth)
(D) Oilzapper (a microbial consortium)
(E) Answer not known

49. Select the correct sequence of the waste management hierarchy, from the most preferred to the least preferred environmental strategy.
(A) Reduce, Reuse, Recycle, Energy Recovery, Disposal
(B) Recycle, Reduce, Reuse, Disposal, Energy Recovery
(C) Reuse, Recycle, Reduce, Energy Recovery, Disposal
(D) Disposal, Energy Recovery, Recycle, Reuse, Reduce
(E) Answer not known

50. Which is the most appropriate action an individual can take to mitigate indoor air pollution caused by volatile organic compounds (VOCs)?
(A) Sealing all windows to prevent the escape of indoor air
(B) Installing a heavy-duty electrostatic precipitator in the kitchen
(C) Using incense sticks and room fresheners regularly
(D) Increasing ventilation and using low-VOC paints and furnishings
(E) Answer not known

51. The following question consists of two statements, one labelled as Assertion (A) and the other as Reason (R). Select the correct answer using the codes given below.
Assertion (A): E-waste is becoming a rapidly growing environmental concern globally.
Reason (R): Electronic products have shorter lifespans, planned obsolescence, and lack formalized recycling infrastructure in many developing nations.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

52. The concept of "Zero Liquid Discharge" (ZLD) adopted by textile dyeing units involves:
(A) Releasing liquid waste at night to minimize solar evaporation.
(B) Discharging effluent into the sea rather than inland rivers.
(C) Treating effluent so water is reused with no liquid waste left.
(D) Diluting waste with fresh water to lower pollutant concentration.
(E) Answer not known

53. Match the international environmental efforts in List I with their primary focus area in List II.
List I: (Efforts)
P. Minamata Convention
Q. Stockholm Convention
R. Basel Convention
S. Montreal Protocol
List II: (Focus Areas)
I. Transboundary movements of hazardous wastes
II. Depletion of the ozone layer
III. Persistent Organic Pollutants (POPs)
IV. Mercury pollution
(A) P-IV, Q-III, R-I, S-II
(B) P-III, Q-IV, R-II, S-I
(C) P-I, Q-II, R-III, S-IV
(D) P-IV, Q-I, R-III, S-II
(E) Answer not known

54. Which of the following is classified as a physical method of soil remediation?
(A) Composting
(B) Landfarming
(C) Bioventing
(D) Soil washing
(E) Answer not known

55. Identify the correctly matched pair regarding the effects of environmental pollution on specific organs.
(A) Asbestos dust — Liver cirrhosis
(B) Silica dust — Silicosis (lung fibrosis)
(C) Cadmium — Minamata disease
(D) Arsenic — Fluorosis
(E) Answer not known

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(D) A is false but R is true.
(E) Answer not known

112. The intentional release of nutrient-rich wastewater into a water body resulting in explosive algal growth is known as:
(A) Biomagnification
(B) Thermal Pollution
(C) Ocean Acidification
(D) Cultural Eutrophication
(E) Answer not known

113. Match the state-level institutions/initiatives in List I with their primary functions in List II.
List I: (Institutions)
P. State Level Environment Impact Assessment Authority (SEIAA)
Q. State Pollution Control Board
R. SIPCOT
S. Swachh Bharat Mission (Urban)
List II: (Functions)
I. Issuing Consent to Operate for industries
II. Providing environmental clearance for Category B projects
III. Promoting solid waste management and ODF in towns
IV. Developing industrial estates with infrastructure
(A) P-II, Q-I, R-IV, S-III
(B) P-I, Q-II, R-III, S-IV
(C) P-IV, Q-III, R-II, S-I
(D) P-II, Q-IV, R-I, S-III
(E) Answer not known

114. Which of the following statements correctly describes 'Point Source Pollution'?
(A) Pollution whose exact source is very difficult to pinpoint.
(B) Wind-blown soil from agricultural fields across the region.
(C) Air pollution caused by vehicular movement across the city.
(D) A single, identifiable source like a factory discharge pipe.
(E) Answer not known

115. Identify the correctly matched pair regarding the health impacts of water pollutants.
(A) Fluoride — Skeletal and dental fluorosis
(B) Arsenic — Blue baby syndrome
(C) Mercury — Cholera
(D) Pathogens — Itai-Itai disease
(E) Answer not known

116. A distinguishing feature of the Southern Zone bench of the National Green Tribunal (NGT) is that it is located in:
(A) Bengaluru
(B) Hyderabad
(C) Chennai
(D) Kochi
(E) Answer not known

117. Consider the following statements regarding Air Pollution Control Devices:
I. A wet scrubber utilizes a liquid solvent to capture gaseous pollutants like SO2.
II. Baghouse filters are highly efficient for controlling very coarse debris but fail for fine dust.
III. Cyclonic separators use centrifugal force to separate particulate matter from the exhaust gas.
IV. Thermal oxidizers are used to destroy Volatile Organic Compounds (VOCs).
Which of the statement(s) given above is/are correct?
(A) I, III and IV
(B) I, II and III
(C) II, III and IV
(D) I and IV
(E) Answer not known

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118. The 'Bhopal Gas Tragedy' of 1984, which shaped India's environmental policies, was caused by the leakage of which toxic gas?
(A) Phosgene
(B) Hydrogen Cyanide
(C) Carbon Monoxide
(D) Methyl Isocyanate (MIC)
(E) Answer not known

119. Arrange the following steps of the Public Hearing process under the EIA notification in chronological order.
I. Submission of Draft EIA Report
II. Issuance of Notice for Public Hearing
III. Conduct of Public Hearing at the project site or close proximity
IV. Forwarding the proceedings to the regulatory authority
(A) I, II, III, IV

(A) Incineration
(B) Pyrolysis
(C) Composting
(D) Biomethanation
(E) Answer not known

63. Match the specific pollutants in List I with their predominant environmental consequence in List II.
List I: (Pollutants)
P. Volatile Organic Compounds (VOCs)
Q. Phosphates
R. Chlorofluorocarbons (CFCs)
S. Microplastics
List II: (Consequences)
I. Bioaccumulation in marine food webs
II. Formation of photochemical smog
III. Eutrophication in freshwater lakes
IV. Stratospheric ozone depletion
(A) P-II, Q-III, R-IV, S-I
(B) P-III, Q-II, R-I, S-IV
(C) P-IV, Q-I, R-III, S-II
(D) P-II, Q-IV, R-I, S-III
(E) Answer not known

64. Which of the following statements correctly identifies a key amendment in the recent Environmental Impact Assessment (EIA) Draft Notification 2020?
(A) Increased public consultation time from 30 days to 60 days.
(B) Mandated public hearings for all Category B2 projects.
(C) Post-facto clearance for industries operating without approval.
(D) Removed the requirement of continuous compliance monitoring.
(E) Answer not known

65. Identify the incorrectly matched pair regarding the types of pollution and their respective legislative acts in India.
(A) Air Pollution — The Air (Prevention and Control of Pollution) Act, 1981
(B) Noise Pollution — Noise Pollution (Prevention and Control) Act, 1972
(C) Water Pollution — The Water (Prevention and Control of Pollution) Act, 1974
(D) Environmental Protection — The Environment (Protection) Act, 1986
(E) Answer not known

66. A key feature of microplastics that makes them highly dangerous to marine life is their:
(A) Ability to sink rapidly and decompose at the ocean floor.
(B) Large size causing immediate structural damage to reefs.
(C) Rapid dissolution in saltwater, altering the ocean's pH.
(D) Absorbing and concentrating toxic pollutants from seawater.
(E) Answer not known

67. Consider the following statements regarding the consequences of environmental degradation:
I. It leads to the loss of biodiversity and habitat destruction.
II. It invariably enhances the resilience of local ecosystems.
III. It exacerbates the frequency and intensity of extreme weather events.
Which of the statement(s) given above is/are correct?
(A) I and II
(B) II and III
(C) I and III
(D) I only
(E) Answer not known

68. Which of the following is an exception to the commonly accepted alternatives to single-use plastics?
(A) Jute bags
(B) Bamboo cutlery
(C) Polystyrene cups
(D) Areca nut leaf plates
(E) Answer not known

69. Select the correct sequence of the atmospheric layers from the surface of the Earth upwards.
(A) Troposphere, Mesosphere, Stratosphere, Thermosphere
(B) Stratosphere, Troposphere, Mesosphere, Thermosphere
(C) Troposphere, Stratosphere, Mesosphere, Thermosphere
(D) Troposphere, Stratosphere, Thermosphere, Mesosphere
(E) Answer not known

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Which of the statement(s) given above is/are correct?
(A) I, II and IV
(B) II, III and IV
(C) I, II and III
(D) I and III
(E) Answer not known

98. The legal intervention initiated against industrial pollution in Vellore largely targeted the:
(A) Local coir processing industries in the rural sector.
(B) Illegal sand mining occurring in the river beds.
(C) Thermal power plant ash pond breaches and overflows.
(D) Leather tanneries discharging untreated chromium waste.
(E) Answer not known

99. Arrange the following solid waste management practices in the sequence of their environmental sustainability (from least sustainable to most sustainable).
I. Sanitary Landfilling
II. Open Dumping
III. Biomethanation / Composting
IV. Source Reduction and Reuse
(A) II, I, III, IV
(B) I, II, III, IV
(C) II, III, I, IV
(D) IV, III, I, II
(E) Answer not known

100. Consider the following statements regarding the National Green Tribunal (NGT):
I. It was established for the effective and expeditious disposal of cases relating to environmental protection.
II. It draws its power directly from Article 21 of the Constitution (Right to life).
III. It handles only criminal cases related to wildlife poaching.
IV. Its Principal Bench is situated in New Delhi.
V. It has a mandate to dispose of applications within 6 months.
Which of the statement(s) given above is/are incorrect?
(A) I, II, III and V
(B) II, III, IV and V
(C) III, IV and V
(D) I, III, IV and V
(E) Answer not known

101. The following question consists of two statements, one labelled as Assertion (A) and the other as Reason (R). Select the correct answer using the codes given below.
Assertion (A): The implementation of the BS VI emission norms required oil refineries to heavily invest in upgrading their fuel processing technologies.
Reason (R): BS VI norms limit the sulphur content in both petrol and diesel to a maximum of 10 parts per million (ppm).
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

102. The presence of excess nitrates in drinking water is primarily responsible for causing which of the following health conditions in infants?
(A) Itai-Itai disease
(B) Minamata disease
(C) Fluorosis
(D) Methemoglobinemia
(E) Answer not known

103. Match the specific environmental zones/areas in List I with their permissible noise limits during daytime in List II.
List I: (Environmental Zones)
P. Industrial Area
Q. Commercial Area
R. Residential Area
S. Silence Zone
List II: (Daytime Noise Limits)
I. 50 dB(A)
II. 55 dB(A)
III. 65 dB(A)
IV. 75 dB(A)
(A) P-IV, Q-III, R-II, S-I
(B) P-III, Q-IV, R-I, S-II
(C) P-IV, Q-II, R-III, S-I
(D) P-I, Q-IV, R-II, S-III
(E) Answer not known

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77. Consider the following statements regarding the Swachh Bharat Mission (SBM):
I. Phase II of SBM(G) focuses on Solid and Liquid Waste Management (SLWM).
II. ODF Plus status implies that a village is ODF and has visual cleanliness with SLWM in place.
III. The urban component (SBM-U) is implemented by the Ministry of Jal Shakti.
IV. Legacy waste biomining is heavily promoted under SBM-U 2.0.
Which of the statement(s) given above is/are correct?
(A) I, II and III
(B) II, III and IV
(C) I, II and IV
(D) I and IV
(E) Answer not known

78. What was the central issue in the landmark environmental case of "Sterlite Copper vs. TNPCB"?
(A) Deforestation in the Western Ghats for mining projects.
(B) Illegal sand mining in the cake basin area.
(C) Pollution and health hazards in Thoothukudi region.
(D) Encroachment of the Pallikaranai marshland ecosystem.
(E) Answer not known

79. Arrange the following major pollution events in India in chronological order of their occurrence.
I. Bhopal Gas Tragedy
II. Ennore Oil Spill
III. Oleum Gas Leak in Delhi
IV. Visakhapatnam (LG Polymers) Styrene Gas Leak
(A) I, III, II, IV
(B) III, I, IV, II
(C) I, II, III, IV
(D) III, I, II, IV
(E) Answer not known

80. Consider the following statements regarding the Air (Prevention and Control of Pollution) Act, 1981:
I. It defines air pollutant to exclude noise.
II. It exclusively regulates indoor air.
III. It denies penal powers to Boards.
IV. It was enacted after the Stockholm Conference.
V. It establishes Central and State Boards.
Which of the statement(s) given above is/are incorrect?
(A) I, II and III
(B) I, II, III and IV
(C) II, III, IV and V
(D) III, IV and V
(E) Answer not known

81. The following question consists of two statements, one labelled as Assertion (A) and the other as Reason (R). Select the correct answer using the codes given below.
Assertion (A): Industrial effluent containing high amounts of heavy metals like chromium must be treated before discharge.
Reason (R): Heavy metals are highly biodegradable and rapidly break down into harmless organic matter in aquatic ecosystems.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

82. The 'London Smog' of 1952 is a classic example of:
(A) Photochemical smog driven by vehicular urban emissions.
(B) Smog resulting entirely from volcanic ash eruptions.
(C) Smog formed by heavy pesticide spraying in the region.
(D) Sulfurous smog caused by high-sulfur coal combustion.
(E) Answer not known

83. Match the Central Government acts in List I with their respective years of enactment in List II.
List I: (Acts)
P. Water (Prevention and Control of Pollution) Act
Q. Air (Prevention and Control of Pollution) Act
R. Environment (Protection) Act
S. National Green Tribunal Act
List II: (Years)

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70. Which is the most appropriate long-term solution to mitigate vehicular pollution in growing urban areas?
(A) Widening all city roads to accommodate more private vehicles.
(B) Banning the sale of all passenger vehicles within city limits.
(C) Relocating all commercial offices to the remote city outskirts.
(D) Electrified mass transit and non-motorized infrastructure.
(E) Answer not known

71. The following question consists of two statements, one labelled as Assertion (A) and the other as Reason (R). Select the correct answer using the codes given below.
Assertion (A): The Noyyal river system, once a lifeline for the Kongu region, has experienced severe ecological degradation.
Reason (R): Unregulated discharge from numerous textile dyeing and bleaching units in Tirupur severely contaminated the river with chemical dyes and salts.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

72. The use of certain plant species like Indian mustard to absorb and concentrate heavy metals from contaminated soils is an application of:
(A) Phytoextraction
(B) Phytostabilization
(C) Rhizofiltration
(D) Phytovolatilization
(E) Answer not known

73. Match the Indian judicial concepts/doctrines in List I with their respective definitions in List II.
List I: (Judicial Doctrines)
P. Precautionary Principle
Q. Polluter Pays Principle
R. Public Trust Doctrine
S. Absolute Liability
List II: (Definitions)
I. The state holds natural resources in trust for public use and cannot hand them over to private ownership.
II. Lack of full scientific certainty shall not be used to postpone measures to prevent environmental degradation.
III. Enterprises engaged in inherently dangerous activities are strictly liable to compensate for any harm caused.
IV. Those who produce pollution are responsible for mitigating it and compensating victims.
(A) P-II, Q-IV, R-I, S-III
(B) P-I, Q-III, R-II, S-IV
(C) P-II, Q-I, R-IV, S-III
(D) P-III, Q-II, R-I, S-IV
(E) Answer not known

74. Which of the following is classified as a biological parameter for testing water pollution?
(A) Most Probable Number (MPN) of Coliforms
(B) Total Dissolved Solids (TDS) concentration
(C) Chemical Oxygen Demand (COD) measurements
(D) Turbidity levels in the water samples
(E) Answer not known

75. Identify the correctly matched pair regarding the rules governed under the Environment (Protection) Act, 1986.
(A) E-Waste Management Rules — Exclusively regulates household kitchen waste
(B) Coastal Regulation Zone (CRZ) Notification — Regulates developmental activities along the coastline
(C) Bio-Medical Waste Management Rules — Regulates emissions from thermal power plants
(D) Hazardous Waste Management Rules — Focuses on noise levels in sensitive zones
(E) Answer not known

76. An essential feature of a Catalytic Converter used in automobiles is that it:
(A) Operates optimally only when leaded petrol is utilized.
(B) Converts CO and NOx into safer CO_2 and nitrogen gases.
(C) Reduces particulate matter by physically filtering soot.
(D) Primarily functions to muffle internal combustion noise.
(E) Answer not known

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the other as Reason (R). Select the correct answer using the codes given below.
Assertion (A): The installation of Electrostatic Precipitators (ESPs) in thermal power plants is essential for air pollution control.
Reason (R): ESPs can remove over 99% of particulate matter present in the exhaust from a thermal power plant.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

92. The phenomenon of 'Ocean Acidification', primarily caused by the absorption of anthropogenic carbon dioxide, severely affects which of the following?
(A) Deep sea hydrothermal vent bacteria and extremophiles.
(B) Calcifying organisms like corals and marine mollusks.
(C) Migratory patterns of pelagic birds across the oceans.
(D) Magnetic navigation abilities of various sea turtles.
(E) Answer not known

93. Match the specific pollutants in List I with the instrumental techniques used for their measurement in List II.
List I: (Pollutants)
P. Particulate Matter (PM10/PM2.5)
Q. Sulphur Dioxide (SO2)
R. Nitrogen Dioxide (NO2)
S. Carbon Monoxide (CO)
List II: (Instrumental Techniques)
I. Non-Dispersive Infrared (NDIR) Spectroscopy
II. Chemiluminescence
III. Ultraviolet (UV) Fluorescence
IV. Beta Attenuation Monitor (BAM)
(A) P-IV, Q-III, R-II, S-I
(B) P-III, Q-IV, R-I, S-II
(C) P-IV, Q-II, R-III, S-I
(D) P-I, Q-IV, R-II, S-III
(E) Answer not known

94. Which of the following is classified as a 'White Category' industry by the Central Pollution Control Board (CPCB), implying it is practically non-polluting?
(A) Cement manufacturing and large-scale production.
(B) Sugar manufacturing and distillery processing.
(C) Solar power generation through photovoltaic cells.
(D) Leather tanning and chemical skin processing.
(E) Answer not known

95. Identify the correctly matched pair regarding the international agreements and their focal areas.
(A) Montreal Protocol — Conservation of wetlands
(B) Ramsar Convention — Regulation of ozone-depleting substances
(C) CITES — Control of transboundary movements of hazardous waste
(D) Kyoto Protocol — Greenhouse gas emission reduction
(E) Answer not known

96. A distinctive feature of Phytoremediation compared to conventional soil washing is that phytoremediation is:
(A) Highly energy-intensive mechanical remediation process.
(B) Remediation method used exclusively for gaseous pollutants.
(C) Slower but more cost-effective and aesthetically pleasing.
(D) Process incapable of removing heavy metals from the soil.
(E) Answer not known

97. Consider the following statements regarding Noise Pollution:
I. Sound levels above 120 dB can cause physical pain and acoustic trauma.
II. Vegetation and green belts act as effective noise buffers in urban areas.
III. The World Health Organization (WHO) recommends indoor noise levels to be kept below 30 dB for healthy sleep.
IV. Noise pollution rules completely exempt religious places from volume restrictions.

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I. 1986
II. 2010
III. 1974
IV. 1981
(A) P-III, Q-IV, R-I, S-II
(B) P-IV, Q-III, R-II, S-I
(C) P-III, Q-I, R-IV, S-II
(D) P-I, Q-IV, R-III, S-II
(E) Answer not known

84. Which of the following statements correctly differentiates between primary and secondary wastewater treatment?
(A) Primary removes dissolved matter; secondary removes solids.
(B) Primary uses chemical chlorine; secondary relies on UV rays.
(C) Primary is physical sedimentation; secondary is biological.
(D) Primary is for agriculture; secondary is for industrial use.
(E) Answer not known

85. Identify the incorrectly matched pair regarding the permissible ambient air quality standards in India (annual average for residential areas).
(A) Lead (Pb) — 10 $\mu g/m^3$
(B) Particulate Matter 10 (PM10) — 60 $\mu g/m^3$
(C) Particulate Matter 2.5 (PM2.5) — 40 $\mu g/m^3$
(D) Sulphur Dioxide (SO2) — 50 $\mu g/m^3$
(E) Answer not known

86. A significant feature of 'Biomagnification' in an ecosystem is that:
(A) Concentration of a toxin decreases as it moves up the levels.
(B) It only affects primary producers like phytoplankton and plants.
(C) It rapidly breaks down toxic heavy metals within the soil layer.
(D) Persistent toxin concentration increases at higher trophic levels.
(E) Answer not known

87. Consider the following statements regarding the Environmental Impact Assessment (EIA) process:
I. It evaluates both the beneficial and adverse socio-economic impacts of a proposed project.
II. Public hearing is completely bypassed for all Category A projects.
III. Category B projects are appraised by the State Expert Appraisal Committee (SEAC).
Which of the statement(s) given above is/are correct?
(A) I and II
(B) II and III
(C) I and III
(D) I only
(E) Answer not known

88. Which of the following is an exception to the primary functions of a State Pollution Control Board?
(A) Planning comprehensive programs for the prevention of state pollution.
(B) Inspecting air pollution control areas at reasonable times.
(C) Directly prosecuting international climate change violators in the ICJ.
(D) Advising the State Government on matters concerning pollution control.
(E) Answer not known

89. Select the correct sequence of E-waste recycling stages in a formalized processing facility.
(A) Collection, Dismantling, Shredding, Metal Extraction
(B) Shredding, Collection, Metal Extraction, Dismantling
(C) Metal Extraction, Shredding, Dismantling, Collection
(D) Collection, Metal Extraction, Shredding, Dismantling
(E) Answer not known

90. Which is the most appropriate reason for the ban on the usage of Diclofenac in veterinary practice in India?
(A) Kidney failure in vultures scavenging on treated carcasses.
(B) Causes acute respiratory distress in domesticated cattle.
(C) Pollutes groundwater leading to biomagnification in humans.
(D) Results in massive degradation of the soil microbiome layer.
(E) Answer not known

91. The following question consists of two statements, one labelled as Assertion (A) and

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104. Which of the following statements correctly describes the 'Greenhouse Effect'?
(A) Depletion of the stratospheric ozone layer by harmful CFCs.
(B) Cooling of the earth surface due to aerosol concentration.
(C) Trapping of outgoing infrared radiation by CO_2 and methane.
(D) Increased penetration of UV rays leading to global warming.
(E) Answer not known

105. Identify the incorrectly matched pair regarding solid waste classification.
(A) Biodegradable waste — Vegetable peels and food remnants
(B) Recyclable waste — Paper, glass, and metals
(C) Inert waste — Construction and demolition debris like concrete
(D) Hazardous waste — Clean cardboard and dry leaves
(E) Answer not known

106. A key feature of 'Photochemical Smog' is that it:
(A) Consists of an oxidizing environment containing ozone and PAN pollutants.
(B) Peaks during early morning hours before the local sunrise.
(C) Forms heavily in rural areas devoid of vehicular traffic.
(D) Decreases visibility but has no impact on human health.
(E) Answer not known

107. Consider the following statements regarding Coastal water pollution:
I. Ballast water discharge can introduce invasive alien species into marine ecosystems.
II. Oil spills decrease the penetration of sunlight, severely affecting marine phytoplankton.
III. Coastal pollution does not affect mangrove ecosystems as they are resistant to heavy metals.
Which of the statement(s) given above is/are correct?
(A) I and III
(B) II and III
(C) I and II
(D) II only
(E) Answer not known

108. Which of the following is an exception to the primary constituents of Municipal Solid Waste (MSW)?
(A) Food waste
(B) High-level radioactive spent fuel
(C) Paper and cardboard
(D) Yard trimmings and plastics
(E) Answer not known

109. Select the correct sequence of the hydrological cycle processes that contribute to the self-purification of the environment.
(A) Evaporation, Condensation, Precipitation, Infiltration
(B) Precipitation, Evaporation, Infiltration, Condensation
(C) Condensation, Precipitation, Evaporation, Infiltration
(D) Infiltration, Condensation, Evaporation, Precipitation
(E) Answer not known

110. Which is the most appropriate action required to manage the growing crisis of E-waste?
(A) Exporting E-waste to underdeveloped countries unregulated.
(B) Landfilling E-waste in coastal regions to save land space.
(C) Establishing formal recycling infrastructure and strict EPR enforcement.
(D) Incinerating all E-waste without emission control measures.
(E) Answer not known

111. The following question consists of two statements, one labelled as Assertion (A) and the other as Reason (R). Select the correct answer using the codes given below.
Assertion (A): The use of unvented biomass cookstoves poses a severe health risk to rural women and children.
Reason (R): Biomass combustion releases high levels of fine particulate matter (PM2.5) and carbon monoxide in enclosed spaces.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.

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56. An important feature of the Public Interest Litigation (PIL) tool in environmental protection in India is that:
(A) Only the direct victim of environmental harm can file the petition.
(B) Strictly adheres to the traditional legal rule of locus standi.
(C) Allows individuals or groups to seek redress for public grievances.
(D) Can be filed only in District Courts rather than the High Court.
(E) Answer not known

57. Consider the following statements regarding the State Pollution Control Boards:
I. They were established under the provisions of the Environment Protection Act, 1986.
II. They grant 'Consent to Establish' (CTE) and 'Consent to Operate' (CTO) to industries.
III. They operate monitoring centres for hazardous waste management.
IV. They enforce the rules pertaining to biomedical waste in the state.
Which of the statement(s) given above is/are correct?
(A) I, II and III
(B) II, III and IV
(C) I and IV
(D) II and III
(E) Answer not known

58. The famous "M.C. Mehta vs. Union of India" case concerning the pollution of the Ganga river (Tanneries case) resulted in the Supreme Court mandating:
(A) Closure of tanneries lacking primary treatment plants.
(B) Shifting all tanneries from Kanpur to other states.
(C) Banning of all leather usage across the nation.
(D) Construction of large dams to dilute river pollutants.
(E) Answer not known

59. Arrange the following steps of an Effluent Treatment Plant (ETP) operation in the correct sequence.
I. Secondary Treatment (Biological process)
II. Primary Treatment (Chemical coagulation/ flocculation)
III. Preliminary Treatment (Screening and grit removal)
IV. Tertiary Treatment (Filtration and disinfection)
(A) II, III, I, IV
(B) III, II, I, IV
(C) I, II, III, IV
(D) III, I, II, IV
(E) Answer not known

60. Consider the following statements regarding Radioactive pollution:
I. Alpha particles can easily penetrate thick concrete walls.
II. Strontium-90 mimics calcium and accumulates in human bones.
III. Deep geological disposal is the preferred method for high-level nuclear waste.
IV. Nuclear reactor accidents are the only source of radioactive pollution.
V. Naturally occurring radon gas is a significant source of background radiation.
Which of the statement(s) given above is/are incorrect?
(A) I, II, III and V
(B) II, III, IV and V
(C) I and IV
(D) II and V
(E) Answer not known

61. The following question consists of two statements, one labelled as Assertion (A) and the other as Reason (R). Select the correct answer using the codes given below.
Assertion (A): Eutrophication leads to a massive reduction in the dissolved oxygen levels of a water body.
Reason (R): The decay of algal blooms by decomposers consumes high amounts of oxygen.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

62. The process of converting solid municipal waste into a soil-like material through natural biological decomposition is defined as:

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(B) II, I, III, IV
(C) I, III, II, IV
(D) II, III, I, IV
(E) Answer not known

120. Consider the following statements regarding Single-Use Plastics:
I. They are designed to be used only once before being discarded.
II. They form a significant portion of marine plastic litter globally.
III. The Indian government banned all plastic use of any micron thickness.
IV. Polyethylene terephthalate (PET) water bottles are strictly classified under this ban.
V. They degrade rapidly within a year when exposed to sunlight and saltwater.
Which of the statement(s) given above is/are incorrect?
(A) I, II, III and V
(B) III, IV and V
(C) I, II, IV and V
(D) II, IV and V
(E) Answer not known

121. The following question consists of two statements, one labelled as Assertion (A) and the other as Reason (R). Select the correct answer using the codes given below.
Assertion (A): Thermal pollution from power plants can severely disrupt local aquatic ecosystems.
Reason (R): Discharging hot water into a river significantly increases the dissolved oxygen holding capacity of the water.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

122. The term 'Smog' was originally coined to describe a mixture of:
(A) Smoke and fog
(B) Snow and fog
(C) Sand and fog
(D) Sulfur and oxygen
(E) Answer not known

123. Match the Central acts in List I with their corresponding primary regulatory body in List II.
List I: (Acts)
P. Environment (Protection) Act, 1986
Q. Wildlife (Protection) Act, 1972
R. Forest (Conservation) Act, 1980
S. Water (Prevention and Control of Pollution) Act, 1974
List II: (Regulatory Bodies)
I. State Forest Department
II. Ministry of Environment, Forest and Climate Change (MoEFCC)
III. National Board for Wildlife
IV. Central/State Pollution Control Boards
(A) P-II, Q-III, R-I, S-IV
(B) P-IV, Q-II, R-III, S-I
(C) P-III, Q-I, R-IV, S-II
(D) P-I, Q-IV, R-II, S-III
(E) Answer not known

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124. Which of the following statements correctly describes the impact of acid rain on monuments like the Taj Mahal?
(A) Deposition of a protective layer of ozone on the marble.
(B) Reaction with marble to form soluble calcium sulphate.
(C) Reaction with the marble to form solid iron oxide layers.
(D) Neutralization of existing pollutants on the marble surface.
(E) Answer not known

125. Identify the incorrectly matched pair regarding industrial corridors and associated pollution concerns.
(A) Nilgiris — Heavy coastal oil spill pollution
(B) Tirupur — Textile dyeing effluent pollution
(C) Vellore — Leather tannery chromium pollution
(D) Thoothukudi — Copper smelting SO2 emissions
(E) Answer not known

126. An important feature of 'Extended Producer Responsibility' (EPR) policy framework is that it:
(A) Applies only to the packaging material of agricultural items.
(B) Exonerates producers from any liability once the product is sold.

17. (B) I, III and IV
Groundwater quality is compromised by various contaminants with distinct origins and health impacts. Excessive fluoride leads to skeletal and dental fluorosis, while high nitrate concentrations cause methemoglobinemia in infants. Coastal regions frequently face saltwater intrusion due to over-extraction of freshwater. Arsenic contamination, however, is predominantly a natural geogenic process resulting from geological formations rather than widespread pesticide application.

18. (D) Collision between cargo vessels Dawn Kanchipuram and BW Maple.
The Ennore oil spill in twenty-seventeen occurred off the coast of Tamil Nadu following a collision between two cargo vessels. This accident released a significant volume of heavy bunker fuel into the marine environment, causing extensive damage to coastal ecosystems and local fishing livelihoods. The event highlighted the critical need for improved maritime safety and rapid oil spill response capabilities.

19. (A) II, I, IV, III
Indian environmental legislation has evolved progressively over several decades. The Water Prevention and Control of Pollution Act was enacted in nineteen-seventy-four, followed by the comprehensive Environment Protection Act in nineteen-eighty-six. Specific regulations for noise pollution were established in the year two thousand, while formalized rules for managing electronic waste were introduced more recently in twenty-eleven to address modern challenges.

20. (C) III and V
Soil remediation involves diverse physical, chemical, and biological strategies. Bioremediation and phytoremediation rely on living organisms to neutralize contaminants, whereas thermal desorption is a physical process for removing volatile substances. In contrast, physical methods do not involve biological breakdown, and composting is fundamentally a biological process driven by microbial activity rather than being a purely physical or mechanical method.

21. (B) Both A and R are true but R is not the correct explanation of A.
Regulatory bodies establish noise limits for different land-use categories to ensure public well-being. For residential areas, the daytime limit is set at fifty-five decibels to prevent annoyance and maintain quality of life. Separately, medical research indicates that prolonged exposure to noise exceeding eighty-five decibels leads to permanent hearing loss. While both facts are accurate, they address different regulatory thresholds.

22. (D) 10.00 p.m. and 6.00 a.m.
Under the Noise Pollution Regulation and Control Rules of the year two thousand, the day is divided into distinct periods for monitoring purposes. Night time is legally defined as the eight-hour window between ten p.m. and six a.m. During these hours, permissible noise levels are more stringent across all designated zones to minimize sleep disturbance and protect public health.

23. (A) P-III, Q-IV, R-I, S-II
Electronic waste contains various hazardous substances that require careful management. Lead is found in significant quantities within cathode ray tube monitors. Mercury is commonly present in the fluorescent backlighting of older flat-screen displays. Cadmium is a primary component of rechargeable batteries, while beryllium is often used in the motherboards and connectors of computers due to its unique properties.

24. (C) Producer responsibility for sound management until end-of-life.
Extended Producer Responsibility is a policy approach that holds manufacturers accountable for the entire lifecycle of their products. This includes the collection and environmentally sound disposal or recycling of goods once they reach the end of their useful lives. By shifting this responsibility to producers, the framework encourages the design of more sustainable, durable, and easily recyclable electronic products.

25. (D) Ghost fishing — Marine animals entangled in abandoned plastic fishing nets.
Plastic pollution has devastating consequences for marine ecosystems. Ghost fishing occurs

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134. Which of the following statements correctly states the principle behind the 'Carbon Tax'?
(A) It is a tax levied strictly on the planting of new trees.
(B) It subsidizes industries producing large volumes of CO_2.
(C) It is a fixed penalty for individuals using non-electric cars.
(D) Fee on carbon content of fuels to reduce GHG emissions.
(E) Answer not known

135. Identify the correctly matched pair regarding environmental monitoring in India.
(A) Central Pollution Control Board (CPCB) — Statutory organization under the Ministry of Earth Sciences
(B) SAFAR (System of Air Quality and Weather Forecasting And Research) — Predicts and monitors urban air quality
(C) National Green Tribunal (NGT) — Drafts constitutional amendments related to land reform
(D) NEERI — Exclusively handles wildlife poaching investigations
(E) Answer not known

136. A unique feature of 'Microplastics' is that they are generally defined as plastic particles having a diameter of less than:
(A) 1 mm
(B) 10 mm
(C) 5 mm
(D) 50 mm
(E) Answer not known

137. Consider the following statements regarding the environmental impacts of modern agriculture:
I. Excessive use of nitrogenous fertilizers contributes to groundwater nitrate contamination.
II. Stubble burning in states like Punjab heavily contributes to winter smog in North India.
III. The overuse of pesticides can affect beneficial pollinators like bees.
IV. Monocropping increases the natural resilience and biodiversity of the soil ecosystem.
Which of the statement(s) given above is/are correct?
(A) I and II
(B) I, II and III
(C) II and IV
(D) I and IV
(E) Answer not known

138. The Minamata disease, which brought global attention to heavy metal pollution, was caused by the consumption of fish contaminated with:
(A) Methylmercury
(B) Lead
(C) Cadmium
(D) Hexavalent Chromium
(E) Answer not known

139. Arrange the following international environmental protocols/agreements in chronological order of their adoption.
I. Paris Agreement
II. Kyoto Protocol
III. Montreal Protocol
IV. Stockholm Convention on POPs
(A) III, II, IV, I
(B) II, III, I, IV
(C) III, IV, II, I
(D) II, I, III, IV
(E) Answer not known

140. Consider the following statements regarding industrial pollution in India:
I. Regions like Vellore and Ranipet face groundwater contamination due to tannery effluents.
II. The Noyyal river suffers from high levels of Total Dissolved Solids (TDS) due to textile dyeing.
III. Ennore creek is a pristine ecosystem with no industrial presence.
IV. Certain SIPCOT industrial estates have faced scrutiny over air and water emissions.
V. Industrial pollution is entirely restricted to the coastal districts.
Which of the statement(s) given above is/are incorrect?
(A) I, II, III and V
(B) III, IV and V
(C) I, III, IV and V
(D) II, IV and V
(E) Answer not known

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50. (D) Increasing ventilation and using low-VOC paints and furnishings.
Volatile organic compounds are common indoor air pollutants that evaporate from various household products, including paints and cleaning agents. To mitigate their impact, individuals should ensure adequate ventilation by opening windows and using exhaust fans. Additionally, choosing low-emission building materials and furnishings significantly reduces the initial concentration of these chemicals, thereby protecting long-term respiratory health and improving overall indoor air quality.

51. (A) Both A and R are true and R is the correct explanation of A.
Electronic waste has emerged as a major global environmental challenge due to the rapid advancement of technology. The combination of shorter product lifecycles and the practice of planned obsolescence has led to a surge in discarded devices. Furthermore, the lack of formalized recycling infrastructure in many regions results in improper disposal, highlighting the urgent need for comprehensive management strategies.

52. (C) Treating effluent so water is reused with no liquid waste left.
Zero Liquid Discharge is a strategic wastewater management system that ensures no liquid waste is released into the environment. Through advanced treatment processes like reverse osmosis and evaporation, all wastewater is purified and recirculated within the industrial facility. This approach is particularly vital for water-intensive industries, as it conserves freshwater resources and prevents the contamination of local rivers and groundwater.

53. (A) P-IV, Q-III, R-I, S-II
International environmental agreements target specific global challenges through collective action. The Minamata Convention focuses on mercury pollution, while the Stockholm Convention addresses persistent organic pollutants. The Basel Convention regulates the transboundary movement of hazardous wastes to protect developing nations. Finally, the Montreal Protocol is a highly successful global effort dedicated to phasing out substances that deplete the ozone layer.

54. (D) Soil washing.
Soil remediation techniques are categorized by their primary mechanism of action. Physical methods, such as soil washing, involve the mechanical separation or removal of contaminants using water or chemical solvents. This contrasts with biological methods like composting, landfarming, and bioventing, which utilize microbial activity to degrade or stabilize pollutants. Soil washing is particularly effective for treating soils contaminated with heavy metals.

55. (B) Silica dust — Silicosis (lung fibrosis).
Occupational and environmental exposure to specific pollutants leads to distinct health conditions. Inhaling silica dust causes silicosis, a chronic lung disease characterized by fibrosis. Other pollutants have different targets; for instance, cadmium exposure is linked to Itai-Itai disease, while mercury is responsible for Minamata disease. Understanding these specific relationships is essential for diagnosing environmental illnesses and implementing effective protective measures.

56. (C) Allows individuals or groups to seek redress for public grievances.
Public Interest Litigation has transformed environmental jurisprudence in India by relaxing the traditional rule of locus standi. This allows any public-spirited individual or organization to file a petition in higher courts on behalf of those unable to do so. This legal tool ensures that environmental concerns, which affect the broader public, can be addressed even without a direct personal victim.

57. (B) II, III and IV
State Pollution Control Boards play a pivotal role in environmental regulation by granting mandatory consents for industrial operations. They are responsible for monitoring hazardous waste and enforcing rules related to bio-medical waste management within their respective states. Although they exercise powers under various environmental laws, these boards were originally established under the Water Prevention and Control of Pollution Act of nineteen-seventy-four.

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infiltration into homes is considered an external factor rather than a common internal household source of pollution.

9. (B) Good, Satisfactory, Moderate, Poor, Very Poor, Severe
The Indian Air Quality Index system classifies air quality into six distinct categories to communicate health risks effectively. These levels begin with the most favorable conditions, termed good, followed by satisfactory and moderate. As pollutant concentrations rise, the categories transition to poor, very poor, and finally severe, reflecting increasingly dangerous impacts on human health and the surrounding ecological environment.

10. (A) To reduce indoor pollution by replacing biomass with LPG.
The Pradhan Mantri Ujjwala Yojana aims to improve environmental health in rural households by providing clean cooking fuel. By facilitating the transition from traditional biomass, such as wood or dung, to liquefied petroleum gas, the program significantly reduces the concentration of hazardous indoor air pollutants. This shift is crucial for protecting the respiratory health of women and children in villages.

11. (D) A is false but R is true.
Photochemical smog is an oxidizing atmosphere that develops in warm, sunny environments rather than cold, foggy mornings. It results from complex chemical reactions between nitrogen oxides and volatile organic compounds under the influence of ultraviolet sunlight. This distinguishes it from classical smog, which is characterized by sulfurous smoke and fog during damp, cold winter periods in heavily industrial urban areas.

12. (B) Acid rain
Precipitation becomes acidic when sulfur dioxide and nitrogen oxides react with water, oxygen, and other chemicals in the atmosphere. This process forms sulfuric and nitric acids, lowering the pH of rainwater significantly below the natural level of five point six. This phenomenon has detrimental effects on aquatic life, forest health, and the structural integrity of various historical marble monuments.

13. (A) P-III, Q-I, R-II, S-IV
Industrial and vehicular pollution control utilizes diverse specialized technologies. Electrostatic precipitators use electrical charges to capture fine dust particles from industrial flue gases. Wet scrubbers effectively remove acidic gases like sulfur dioxide. Catalytic converters are essential for reducing toxic emissions from motor vehicles, while baghouse filters act as large-scale vacuum cleaners to trap particulate matter in fabric bags in industries.

14. (C) Agricultural runoff carrying fertilizers into a river.
Non-point source pollution originates from diffuse areas rather than a single, identifiable discharge point. Agricultural runoff is a prominent example, where rainwater washes fertilizers, pesticides, and animal waste from vast fields into water bodies. This contrasts with point sources, such as industrial pipes or sewage treatment plants, which release pollutants into the environment from specific, localized, and easily measurable locations.

15. (D) Yamuna — Eutrophication from Delhi's farm runoff.
While various rivers face unique pollution challenges, the Yamuna in the Delhi stretch is primarily degraded by the massive discharge of untreated domestic sewage and industrial effluents. Although eutrophication occurs due to nutrient enrichment, the main drivers are urban waste streams rather than agricultural runoff. Other examples like the Ganga and Noyyal are correctly associated with specific industrial tannery clusters.

16. (C) High levels of dissolved solids and chemical dyes.
The Noyyal river system in Tamil Nadu has suffered extensive ecological damage due to the concentrated textile industry in Tirupur. The discharge of untreated or partially treated effluents from numerous dyeing and bleaching units has led to extremely high levels of total dissolved solids and persistent chemical dyes. This contamination has severely affected agriculture and local groundwater quality for decades.

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(C) Internalizes environmental costs into product market prices.
(D) Makes the consumer solely responsible for the proper recycling.
(E) Answer not known

127. Consider the following statements regarding the health effects of noise pollution:
I. It can induce cardiovascular issues such as hypertension.
II. It impairs cognitive development and learning in children.
III. It exclusively affects the auditory system and has no physiological impact on other body systems.
Which of the statement(s) given above is/are correct?
(A) I and III
(B) II and III
(C) I and II
(D) II only
(E) Answer not known

128. Which of the following is an exception to the natural causes of environmental degradation?
(A) Volcanic eruptions releasing SO2
(B) Forest fires triggered by lightning
(C) Ground-level ozone formation from vehicular exhaust
(D) Natural dust storms
(E) Answer not known

129. Select the correct sequence of steps involved in standard drinking water purification at municipal treatment plants.
(A) Coagulation, Flocculation, Sedimentation, Filtration, Disinfection
(B) Flocculation, Coagulation, Sedimentation, Disinfection, Filtration
(C) Filtration, Coagulation, Flocculation, Sedimentation, Disinfection
(D) Sedimentation, Disinfection, Coagulation, Flocculation, Filtration
(E) Answer not known

130. Which is the most appropriate indicator organism used universally to test the fecal contamination of water bodies?
(A) Streptococcus pneumoniae
(B) Mycobacterium tuberculosis
(C) Bacillus anthracis
(D) Escherichia coli (E. coli)
(E) Answer not known

131. The following question consists of two statements, one labelled as Assertion (A) and the other as Reason (R). Select the correct answer using the codes given below.
Assertion (A): The proliferation of water hyacinth in lakes is a classic symptom of eutrophication.
Reason (R): Water hyacinth absorbs heavy metals and completely purifies the water body, restoring natural biodiversity.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

132. The process of burning municipal solid waste at very high temperatures in the presence of oxygen to reduce its volume and generate energy is termed:
(A) Biomining
(B) Pyrolysis
(C) Incineration
(D) Landfilling
(E) Answer not known

133. Match the colour-coded bins for Bio-medical waste in List I with their appropriate disposal method in List II.
List I: (Bin Colors)
P. Yellow Bin
Q. Red Bin
R. White (Translucent) Bin
S. Blue Bin
List II: (Disposal Methods)
I. Autoclaving followed by shredding and recycling
II. Incineration or deep burial
III. Disinfection followed by shredding and dry heat sterilization
IV. Autoclaving and micro-waving (for glass and metallic body implants)
(A) P-II, Q-I, R-III, S-IV
(B) P-I, Q-II, R-IV, S-III
(C) P-III, Q-IV, R-I, S-II
(D) P-II, Q-III, R-IV, S-I
(E) Answer not known

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when discarded or lost plastic fishing nets continue to trap and kill marine animals indefinitely. This differs from other impacts like biomagnification, where toxins become more concentrated in predators. Unlike biodegradable materials, synthetic plastics persist for centuries, forming massive accumulation zones in the world's oceans and threatening biodiversity.

26. (A) Complete ban on multi-layered packaging for all essential food.
The Indian government's initiative against single-use plastics targets specific items with high littering potential and low utility. While the ban strictly prohibits items like plastic flags, balloon sticks, and thin polythene bags, it does not currently impose a complete ban on all multi-layered packaging for essential food items. Instead, such packaging is primarily managed through extended producer responsibility frameworks.

27. (B) I and III
Light pollution is the excessive or inappropriate use of artificial outdoor light. This phenomenon creates skyglow, which obscures celestial views and interferes with astronomical observations. Ecologically, artificial light at night severely disrupts the navigational abilities of migratory birds and disorients sea turtle hatchlings. It does not enhance nesting behavior but rather discourages turtles from using traditional coastal nesting sites.

28. (B) Discharge of municipal sewage rich in heavy metals.
Thermal pollution involves significant changes in water temperature that harm aquatic ecosystems. Common causes include the discharge of hot coolant water from power plants and the removal of riparian vegetation. Releasing cold water from deep reservoir layers also constitutes thermal stress. However, the discharge of municipal sewage containing heavy metals is classified as chemical pollution rather than a thermal issue.

29. (A) Screening, Scoping, Public Consultation, Appraisal
The Environmental Impact Assessment process follows a structured sequence to evaluate proposed projects. It begins with screening to determine if an assessment is required, followed by scoping to identify key environmental concerns. After preparing the report, public consultation allows local communities to provide input. Finally, an appraisal is conducted by expert committees to recommend the project for clearance.

30. (C) The entity causing pollution bears management and prevention costs.
The Polluter Pays Principle is a fundamental concept in environmental law stating that those who produce pollution should bear the costs of managing it. This includes the expenses for preventing damage to human health or the environment and the costs of any necessary remediation. It ensures that the environmental consequences of industrial activities are internalized rather than being subsidized.

31. (A) Both A and R are true and R is the correct explanation of A.
Zero Liquid Discharge is an advanced wastewater treatment process designed to eliminate the discharge of liquid waste into the environment. This system is mandated for highly polluting sectors, such as tanneries, because it ensures that all water is recovered and reused within the facility. By preventing the release of hazardous effluents into surface waters, it protects vital local water resources.

32. (C) Phytoremediation
Phytoremediation is a sustainable technology that utilizes plants and their associated microbes to remove, degrade, or contain pollutants. Engineered wetlands are a practical application of this method, where specific aquatic plant species naturally filter and treat industrial or municipal effluents. This approach provides an eco-friendly and cost-effective alternative to conventional mechanical treatment systems for improving water quality before final discharge.

33. (A) P-II, Q-III, R-IV, S-I
Various locations in Tamil Nadu serve as critical case studies for environmental management. Vellore is historically associated with severe chromium contamination from the leather industry. The Noyyal river basin highlights the challenges of textile dyeing pollution in Tirupur. SIPCOT parks are often central to industrial corridor disputes, while the Ennore coast was

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significantly impacted by a major maritime oil spill in twenty-seventeen.

34. (D) Large-scale leather tanning and processing.
The Pollution Control Board categorizes industries based on their environmental impact score. Large-scale leather tanning and processing are placed in the red category because they involve significant use of hazardous chemicals and generate high volumes of toxic effluents. In contrast, activities like handloom weaving or the assembly of electrical components have minimal environmental footprints and are classified into lower-impact categories.

35. (A) Blue Cardboard Box — Radioactive hospital waste.
Bio-medical waste management follows strict color-coding for safe segregation and disposal. Yellow bags are for anatomical waste, while red bags contain contaminated recyclable items. Translucent containers are reserved for sharps like needles. However, blue boxes or bins are designated specifically for glassware and metallic body implants. Radioactive hospital waste is not part of this standard system and requires specialized handling.

36. (C) Is guided by the principles of natural justice rather than strict civil procedure.
The National Green Tribunal was established as a specialized body for the effective resolution of environmental disputes. A defining feature of the tribunal is that it is not bound by the rigid procedural rules of the Code of Civil Procedure. Instead, it operates based on the principles of natural justice, allowing for a more flexible and expeditious judicial process in environmental matters.

37. (C) I and III
The Swachh Bharat Mission is a nationwide campaign aimed at improving sanitation and waste management. It focuses on achieving open defecation free status across all urban and rural areas. While the rural component emphasizes both liquid and solid waste management, the urban component also includes significant provisions for municipal waste. The mission was originally launched in twenty-fourteen to coincide with Gandhi.

38. (D) The Precautionary Principle and Sustainable Development.
The Vellore Citizens Welfare Forum case is a landmark in Indian environmental law, particularly concerning industrial pollution from tanneries. In its judgment, the Supreme Court formally integrated the Precautionary Principle and the concept of Sustainable Development into the nation's legal framework. This ruling established that environmental protection and economic growth must be balanced, ensuring that industrial progress does not compromise ecological integrity.

39. (A) III, I, II, IV
Global and national environmental milestones have shaped India's regulatory landscape over several decades. The nineteen-seventy-two Stockholm Conference served as an early catalyst for environmental awareness. Subsequently, India enacted the Environment Protection Act in nineteen-eighty-six. More recently, the National Green Tribunal was established in twenty-ten, followed by the launch of the Swachh Bharat Mission in twenty-fourteen to address national challenges.

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40. (D) II and V
SIPCOT industrial complexes are designed to foster economic growth by providing essential infrastructure, including effluent treatment facilities. However, these projects are not exempt from environmental impact assessment norms and must adhere to strict regulatory processes. Furthermore, SIPCOT operations are subject to state pollution control board regulations, ensuring that industrial development complies with both state and central environmental standards to protect resources.

41. (C) A is true but R is false.
Ozone plays dual roles depending on its atmospheric location. In the stratosphere, it forms a vital shield against ultraviolet radiation. Conversely, at ground level, it acts as a harmful pollutant and respiratory irritant. This lower-level ozone is not formed through the natural breakdown of the stratospheric layer during rain but rather through chemical reactions between pollutants in sunny conditions.

42. (A) The Bhopal Gas Tragedy of 1984.
The Environment Protection Act of nineteen-eighty-six was enacted as umbrella legislation to provide a comprehensive framework for environmental management in India. Its immediate catalyst was the catastrophic Bhopal Gas Tragedy of nineteen-eighty-four, which exposed significant gaps in existing safety and environmental laws. The act empowers the central government to coordinate activities and establish stringent standards for pollution control.

43. (A) P-II, Q-I, R-IV, S-III
The Earth's atmosphere consists of several layers with unique environmental functions. The troposphere is the site of most weather events and air pollution. Above it, the stratosphere contains the protective ozone layer. The mesosphere is characterized by extremely low temperatures where meteors typically incinerate. Finally, the thermosphere absorbs high-energy solar radiation and houses the ionosphere, which is critical for global communications.

44. (B) Sets legal limits on 12 air pollutants to protect public health.
The National Ambient Air Quality Standards are established to safeguard public health and the environment from the harmful effects of air pollution. These standards specify the maximum permissible concentrations for twelve major pollutants, including particulate matter and various gases, in the ambient air. They serve as a benchmark for monitoring air quality across the nation and guiding mitigation strategies.

45. (A) BOD — Oxygen required by bacteria to decompose organic matter.
Biological Oxygen Demand is a critical indicator of water quality, measuring the amount of dissolved oxygen consumed by microorganisms during the decomposition of organic matter. High demand levels typically signify heavy organic pollution. In contrast, Chemical Oxygen Demand measures the total chemically oxidizable material, while high dissolved oxygen levels generally indicate healthy aquatic environments capable of supporting diverse biological life.

46. (C) The entire solid waste generated in Chennai is incinerated for power generation.
Urban corporations manage municipal solid waste through various methods, including source segregation and decentralized composting. In Chennai, legacy waste at major dump yards is being addressed through biomining projects. However, it is incorrect to state that the entire city's waste is incinerated for power generation. Most waste is processed through composting or disposed of in landfills, while incineration remains limited.

47. (C) I and III
The Water Prevention and Control of Pollution Act of nineteen-seventy-four established the legal framework for maintaining and restoring water quality in India. It led to the creation of the Central and State Pollution Control Boards to enforce environmental standards. While the act prohibits the discharge of harmful pollutants into streams and wells, its jurisdiction specifically includes groundwater resources along with surface waters.

48. (C) Eichhornia crassipes (Water hyacinth).
Bioremediation of oil spills primarily utilizes specialized microorganisms that can break down complex hydrocarbons. Microbial consortia like Oilzapper and specific bacteria such as Alcanivorax are highly effective for this purpose. In contrast, while the water hyacinth is utilized for absorbing heavy metals and excess nutrients from wastewater, it is not a standard biological agent for the remediation of marine oil spills.

49. (A) Reduce, Reuse, Recycle, Energy Recovery, Disposal.
The waste management hierarchy prioritizes strategies based on their environmental sustainability. The most preferred approach is reducing waste generation at the source, followed by reusing items. Recycling materials and recovering energy from waste are subsequent steps. Final disposal, such as landfilling, is considered the least desirable option and should only be utilized when all other management strategies have been exhausted.

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ANSWERS

1. (C) A is true but R is false.
The environment consists of physical, chemical, and biological components that interact dynamically to support human life. While nature possesses certain self-regulatory capacities, environmental degradation is not always reversible. Irreparable damage, such as species extinction or severe soil depletion, often persists despite halting anthropogenic activities immediately, making the claim of universal reversibility scientifically inaccurate and potentially misleading for policy.

2. (D) Ground-level ozone
Secondary air pollutants are not emitted directly from sources but form in the atmosphere through chemical reactions between primary pollutants and environmental factors. Tropospheric ozone is a classic example, produced when nitrogen oxides and volatile organic compounds react in the presence of ultraviolet sunlight. This complex process distinguishes it from primary pollutants like carbon monoxide and sulfur dioxide, which are released directly.

3. (A) P-III, Q-IV, R-II, S-I
Anthropogenic sources vary significantly across major pollutants. Coal-based thermal power plants are primary emitters of sulfur dioxide due to fuel impurities. High-temperature combustion in automobile engines facilitates nitrogen oxide formation. Refrigeration systems and aerosols traditionally released chlorofluorocarbons, while incomplete fossil fuel combustion in vehicles remains the predominant source of carbon monoxide. Identifying these specific sources is crucial for effective pollution control.

4. (C) PM 2.5 can penetrate deep into the alveolar region of the lungs, while PM 10 is largely filtered in the upper respiratory tract.
Particulate matter is categorized by aerodynamic diameter, significantly influencing health impacts. Fine particles, smaller than two point five micrometers, possess the ability to bypass upper respiratory defenses and settle deep within the alveolar regions of the lungs. Coarser particles, up to ten micrometers, are generally trapped in the nose and throat, causing less severe internal physiological damage than fine particles.

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(A) Carbon monoxide — Reduces blood oxygen-carrying capacity
Carbon monoxide poses a severe health risk because it binds to hemoglobin with a much higher affinity than oxygen. This creates carboxyhemoglobin, which significantly impairs the blood's ability to transport oxygen to vital organs and tissues. Other pollutants like lead and mercury target the nervous system, while nitrates in water are specifically linked to infant methemoglobinemia rather than air pollution.

6. (D) Carbon dioxide is a primary pollutant measured for AQI.
The National Air Quality Index in India simplifies complex monitoring data into a single numerical value for public understanding. It evaluates eight specific pollutants, including particulate matter, nitrogen dioxide, sulfur dioxide, and carbon monoxide. Carbon dioxide, while a significant greenhouse gas affecting global climate, is not included as a criteria pollutant for calculating this specific health-based urban air quality index.

7. (A) I and III
Bharat Stage six norms represent a significant leap in vehicular emission standards by mandating a reduction in fuel sulfur content to ten parts per million. India strategically transitioned directly from stage four to stage six to accelerate pollution control. While specific technologies like particulate filters manage soot, the primary focus remains on drastically reducing sulfur and nitrogen emissions from vehicles.

8. (C) Photochemical smog infiltration
Indoor air quality in rural households is primarily degraded by the domestic combustion of solid biomass and kerosene for cooking or heating. While volatile organic compounds may be present in building materials, photochemical smog is specifically an outdoor atmospheric phenomenon requiring ultraviolet radiation. Its

58. (A) Closure of tanneries lacking primary treatment plants.
The landmark legal battle initiated by M.C. Mehta against the pollution of the Ganga river targeted industrial units in Kanpur. The Supreme Court emphasized that the life of the river was more important than the revenue from the leather industry. Consequently, the court ordered the closure of several tanneries that failed to install primary effluent treatment plants to manage their waste.

59. (B) III, II, I, IV
Effluent Treatment Plants operate through a sequence of stages to purify industrial wastewater. The process begins with preliminary treatment for screening solids. Primary treatment follows, involving chemical coagulation and sedimentation. Secondary treatment utilizes biological processes to degrade organic matter. Finally, tertiary treatment provides advanced purification, such as filtration and disinfection, ensuring the treated water is safe for discharge or reuse in applications.

60. (C) I and IV
Radioactive pollution originates from both natural and anthropogenic sources, including medical waste and cosmic radiation. While high-level waste requires deep geological disposal, alpha particles actually have very low penetration power and cannot pass through thick walls. Furthermore, nuclear accidents are not the sole source of radiation, as naturally occurring radon gas contributes significantly to the background radiation levels found in the environment.

61. (A) Both A and R are true and R is the correct explanation of A.
Eutrophication occurs when excessive nutrients enter a water body, triggering rapid algal growth. As these algal blooms eventually die, they are broken down by aerobic decomposers. This microbial activity consumes vast amounts of dissolved oxygen, leading to hypoxic conditions that can cause massive fish kills. The relationship between nutrient enrichment and subsequent oxygen depletion is a fundamental aspect of aquatic ecological degradation.

62. (C) Composting
Composting is a natural biological process that transforms organic municipal solid waste into a nutrient-rich, soil-like material. It involves the controlled aerobic decomposition of organic matter by microorganisms such as bacteria and fungi. This method not only reduces the volume of waste sent to landfills but also provides a sustainable way to recycle nutrients back into the soil for agricultural use.

63. (A) P-II, Q-III, R-IV, S-I
Different pollutants cause varied environmental impacts depending on their chemical properties. Volatile organic compounds contribute to photochemical smog formation in urban areas. Excessive phosphates in water bodies lead to eutrophication and algal blooms. Chlorofluorocarbons are primarily responsible for the depletion of the stratospheric ozone layer. Meanwhile, microplastics represent a growing threat due to their persistence and bioaccumulation in marine food webs.

64. (C) Post-facto clearance for industries operating without approval.
The Draft Environmental Impact Assessment Notification of twenty-twenty introduced several controversial changes to the existing regulatory framework. A significant feature is the provision for post-facto clearance, which allows projects to seek environmental approval even after they have commenced operations without it. This represents a major shift from previous norms that strictly required environmental clearance before the start of any industrial activity.

65. (B) Noise Pollution (Prevention and Control) Act, 1972.
India's environmental legal framework includes various acts tailored to specific pollution types. The Water and Air Acts were enacted in nineteen-seventy-four and nineteen-eighty-one, respectively. While the Environment Protection Act of nineteen-eighty-six serves as a comprehensive umbrella law, noise pollution is specifically regulated through rules framed under this act in the year two thousand, rather than a separate act.

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116. (C) Chennai.
The National Green Tribunal was established to provide specialized and expeditious environmental justice across India. To ensure regional accessibility, the tribunal operates with several benches located in different parts of the country. The Southern Zone bench is headquartered in Chennai and has jurisdiction over environmental matters arising from the southern states. This structure allows for more effective resolution of disputes.

117. (A) I, III and IV
Diverse technologies are employed to control industrial air emissions and protect air quality. Wet scrubbers are effective for removing gaseous pollutants like sulfur dioxide, while thermal oxidizers are used to destroy volatile organic compounds. Cyclonic separators utilize centrifugal force to remove larger particulate matter. Contrary to some beliefs, baghouse filters are actually among the most efficient devices for capturing fine dust.

118. (D) Methyl Isocyanate (MIC).
The Bhopal Gas Tragedy of nineteen-eighty-four remains one of the world's worst industrial disasters. It was caused by the accidental release of methyl isocyanate gas from a pesticide plant. This highly toxic chemical caused thousands of immediate fatalities and left tens of thousands with chronic health issues. The event led to a profound shift in industrial safety and environmental legislation.

119. (A) I, II, III, IV
The public hearing is a crucial participatory stage in the Environmental Impact Assessment process. It begins with the project proponent submitting a draft report to the relevant authorities. A formal notice is then issued to inform the public about the upcoming session. During the hearing, local stakeholders can voice their concerns. Finally, the proceedings and public feedback are compiled for appraisal.

120. (B) III, IV and V.
Single-use plastics are significant environmental pollutants due to their persistence and high littering potential. While the Indian government has banned several specific items like plastic straws and thin bags, the ban does not extend to all plastic products or PET water bottles. Furthermore, these synthetic materials do not degrade rapidly in the environment, breaking down into microplastics over many centuries.

121. (C) A is true but R is false.
Thermal pollution from industrial sources, such as power plants, can be highly damaging to aquatic life. When hot water is discharged into a river, it significantly reduces the water's ability to hold dissolved oxygen. This occurs because the solubility of oxygen decreases as temperature rises. The resulting low-oxygen conditions, combined with increased metabolic rates, can lead to severe physiological stress.

122. (A) Smoke and fog.
The term smog was originally created as a portmanteau of the words smoke and fog. It was first used in the early twentieth century to describe the thick, polluted air seen in major industrial cities like London. This classical type of smog is typically formed when smoke from coal combustion mixes with natural fog during cold and damp weather conditions.

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123. (A) P-II, Q-III, R-I, S-IV
Environmental management in India is distributed across various specialized agencies and ministries. The Ministry of Environment, Forest and Climate Change is the primary body for the Environment Protection Act. The National Board for Wildlife oversees the Wildlife Protection Act, while state forest departments implement the Forest Conservation Act. Additionally, Pollution Control Boards are responsible for the Water and Air Acts.

124. (B) Reaction with marble to form soluble calcium sulphate.
Acid rain poses a significant threat to historical monuments made of marble, such as the Taj Mahal. The sulfuric acid present in the rain reacts with the calcium carbonate in the marble to form calcium sulfate, also known as gypsum. Because gypsum is more soluble than marble, it eventually washes away, leading to the gradual erosion of the monument's surface.

125. (A) Nilgiris — Heavy coastal oil spill pollution.
Different industrial corridors in Tamil Nadu face specific environmental challenges related to their

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safe for human consumption. This biological measurement is distinct from chemical tests like chemical oxygen demand or physical assessments such as measuring turbidity or total dissolved solids.

75. (B) Coastal Regulation Zone (CRZ) Notification — Regulates developmental activities along the coastline.
The Environment Protection Act of nineteen-eighty-six provides the legal basis for various specific regulations. The Coastal Regulation Zone notification is a crucial instrument for protecting sensitive marine ecosystems by controlling developmental activities near the shore. Other rules, such as those for e-waste or bio-medical waste, address different challenges, while hazardous waste rules focus on the handling and disposal of toxic substances.

76. (B) Converts CO and NOx into safer CO_2 and nitrogen gases.
Catalytic converters are essential components in modern vehicles designed to reduce the toxicity of exhaust gases. They facilitate chemical reactions that convert harmful carbon monoxide and nitrogen oxides into less damaging substances like carbon dioxide and nitrogen gas. For these devices to function effectively and prevent damage to the catalyst, vehicles must use unleaded petrol, as lead can deactivate the system.

77. (C) I, II and IV
The Swachh Bharat Mission has evolved to address comprehensive sanitation challenges. Phase two of the rural component emphasizes solid and liquid waste management, leading to ODF Plus status for villages. In urban areas, the second phase focuses heavily on the biomining of legacy waste in dump yards. However, the urban component is managed by the Ministry of Housing and Urban Affairs specifically.

78. (C) Pollution and health hazards in Thoothukudi region.
The legal dispute involving Sterlite Copper in Thoothukudi centered on allegations of severe environmental pollution and its resulting impact on public health. Local communities and regulators raised concerns regarding sulfur dioxide emissions and the contamination of groundwater with heavy metals. This case highlights the ongoing tension between industrial development and environmental protection, leading to significant judicial interventions and plant closure.

79. (A) I, III, II, IV
India has experienced several major industrial and environmental disasters that have prompted regulatory changes. The nineteen-eighty-four Bhopal Gas Tragedy was followed shortly by the nineteen-eighty-five Oleum gas leak in Delhi. Much later, the Ennore oil spill occurred in twenty-seventeen, and the Vizag styrene gas leak took place in twenty-twenty. These events underscore the critical importance of stringent industrial safety protocols.

80. (A) I, II and III
The Air Prevention and Control of Pollution Act of nineteen-eighty-one provides the legal framework for managing air quality. Contrary to some misconceptions, the act was amended to include noise as a pollutant and grants significant penal powers to pollution control boards. Its primary focus is on regulating ambient air quality across the nation rather than being limited to indoor environments or lacking enforcement.

81. (C) A is true but R is false.
Industrial effluents containing heavy metals like chromium pose a persistent threat to aquatic ecosystems. These substances are highly toxic and, unlike organic pollutants, are not biodegradable, meaning they do not break down into harmless matter. Instead, they persist in the environment and can accumulate in the food chain through biomagnification, necessitating rigorous treatment before any discharge into water bodies.

82. (D) Sulfurous smog caused by high-sulfur coal combustion.
The Great Smog of London in nineteen-fifty-two was a severe air pollution event characterized by a thick layer of sulfurous smog. It was primarily caused by the intensive combustion of high-sulfur coal during a period of cold weather and anticyclonic conditions. This event resulted in thousands of respiratory-related deaths and served as a major catalyst for modern environmental legislation and air standards.

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66. (D) Absorbing and concentrating toxic pollutants from seawater.
Microplastics are particularly hazardous to marine life because their small size allows them to be easily ingested by a wide range of organisms. Beyond physical harm, these particles act as magnets for persistent organic pollutants and toxic metals present in the water. Once ingested, these concentrated toxins can leach into the tissues of marine animals, leading to severe health impacts and bioaccumulation.

67. (C) I and III
Environmental degradation has profound and far-reaching consequences for the planet's health. It directly leads to the destruction of natural habitats and a significant loss of global biodiversity. Furthermore, the disruption of natural ecosystems exacerbates the frequency and intensity of extreme weather events like floods and droughts. Rather than enhancing resilience, degradation weakens the ability of ecosystems to recover from stress.

68. (C) Polystyrene cups.
Mitigating plastic pollution involves transitioning to sustainable materials that decompose naturally or can be reused. Jute bags, bamboo cutlery, and plates made from areca nut leaves are excellent biodegradable alternatives to single-use plastics. However, polystyrene cups are made from synthetic polymers that persist in the environment for centuries. They represent the very type of plastic pollution that these alternatives seek to replace.

69. (C) Troposphere, Stratosphere, Mesosphere, Thermosphere.
The Earth's atmosphere is structured into distinct layers characterized by different temperature gradients and compositions. Starting from the surface, the troposphere is the first layer, where most weather occurs. It is followed by the stratosphere, which contains the ozone layer. Above this lies the mesosphere, the coldest region, and finally the thermosphere, which extends into the edges of space beyond the mesosphere.

70. (D) Electrified mass transit and non-motorized infrastructure.
Sustainable urban transport planning is essential for the long-term mitigation of vehicular pollution. While technological improvements in individual vehicles help, the most effective strategy involves developing robust electrified mass transit systems and promoting non-motorized options like cycling and walking. This reduces the overall reliance on private fossil-fuel-powered vehicles, leading to significant improvements in urban air quality and a reduction in greenhouse gas emissions.

71. (A) Both A and R are true and R is the correct explanation of A.
The Noyyal river in Tamil Nadu has faced severe ecological decline due to rapid industrialization in its catchment area. Unregulated discharge from the concentrated textile hub in Tirupur released large volumes of untreated chemical dyes and salts into the river system. This industrial pollution has not only destroyed the river's biodiversity but also rendered its water unfit for irrigation and domestic use.

72. (C) Rhizofiltration.
Rhizofiltration is a form of phytoremediation that involves the use of plant roots to absorb or precipitate contaminants, particularly heavy metals, from water or soil moisture. Species like Indian mustard are specifically chosen for their extensive root systems and high tolerance for toxic substances. This natural process effectively filters pollutants, preventing them from spreading further into the environment and allowing for safer management.

73. (A) P-II, Q-IV, R-I, S-III
Indian environmental law is built upon several key judicial doctrines. The Precautionary Principle mandates action despite scientific uncertainty, while the Polluter Pays Principle ensures that industries internalize environmental costs. The Public Trust Doctrine establishes the state as a trustee of natural resources for the public. Lastly, Absolute Liability holds enterprises strictly accountable for any harm resulting from inherently dangerous industrial activities.

74. (A) Most Probable Number (MPN) of Coliforms.
Water quality assessment involves testing various physical, chemical, and biological parameters. The Most Probable Number of coliform bacteria is a primary biological indicator used to detect fecal contamination and determine if water is

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to the particles in the flue gas, which are then collected on oppositely charged plates. Because they can remove more than ninety-nine percent of particulate matter, their installation is essential for complying with emission standards and protecting the surrounding air quality.

92. (B) Calcifying organisms like corals and marine mollusks.
Ocean acidification occurs as the world's oceans absorb increasing amounts of atmospheric carbon dioxide, leading to a decrease in seawater pH. This change in chemistry significantly reduces the availability of carbonate ions, which are essential for calcifying organisms. Corals, mollusks, and some plankton species struggle to build and maintain their calcium carbonate shells and skeletons, threatening the stability of marine food webs.

93. (A) P-IV, Q-III, R-II, S-I
Accurate air quality monitoring relies on various sophisticated instrumental techniques. Particulate matter is often measured using beta attenuation monitors. Sulfur dioxide concentrations are determined through ultraviolet fluorescence, while nitrogen dioxide is measured using chemiluminescence. Carbon monoxide is typically analyzed via non-dispersive infrared spectroscopy. These standardized methods ensure that data across different monitoring stations is reliable and comparable for national reporting.

94. (C) Solar power generation through photovoltaic cells.
The classification of industries into color-coded categories helps in streamlined environmental regulation. The white category represents industries that are practically non-polluting and do not require a formal consent to operate. Solar power generation through photovoltaic cells is a prime example of such a sustainable activity. In contrast, sectors like cement manufacturing or leather tanning have high pollution potential and fall into regulated categories.

95. (D) Kyoto Protocol — Greenhouse gas emission reduction.
International environmental governance is facilitated through various treaties with specific goals. The Kyoto Protocol was a landmark agreement focused on reducing greenhouse gas emissions to combat global climate change. Other treaties have different focuses; the Montreal Protocol targets ozone-depleting substances, the Ramsar Convention protects vital wetlands, and CITES regulates the international trade of endangered species to ensure their continued survival.

96. (C) Slower but more cost-effective and aesthetically pleasing.
Phytoremediation offers a sustainable alternative to conventional mechanical soil cleaning methods. While processes like soil washing are rapid, they are often expensive and energy-intensive. In contrast, using plants to treat contaminated sites is a solar-driven process that is significantly more cost-effective and improves the visual landscape. Although it typically takes longer to reach goals, its low impact is advantageous.

97. (C) I, II and III
Noise pollution has significant physiological and psychological effects on human health. Extreme sound levels exceeding one hundred and twenty decibels can cause immediate physical pain. For healthy sleep, international guidelines suggest keeping indoor noise levels very low. In urban planning, establishing green belts and dense vegetation serves as an effective natural barrier to absorb and deflect unwanted sound in cities.

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98. (D) Leather tanneries discharging untreated chromium waste.
The environmental crisis in the Vellore region was primarily driven by the massive concentration of the leather tanning industry. For decades, many units discharged untreated effluents containing toxic hexavalent chromium directly into the Palar river basin. This led to extensive groundwater contamination, affecting agriculture and drinking water. Significant legal interventions were required to mandate the installation of common effluent treatment plants.

99. (A) II, I, III, IV
Sustainable waste management involves moving away from primitive disposal methods toward resource conservation. Open dumping is the most harmful and least sustainable practice. Sanitary landfilling provides a more controlled but still final disposal option. Biological processes like

83. (A) P-III, Q-IV, R-I, S-II
Indian environmental policy is grounded in several key legislative acts enacted over the decades. The Water Act of nineteen-seventy-four was the first major piece of legislation, followed by the Air Act in nineteen-eighty-one. The comprehensive Environment Protection Act was introduced in nineteen-eighty-six after the Bhopal tragedy. More recently, the National Green Tribunal Act of twenty-ten provided a specialized judicial body.

84. (C) Primary is physical sedimentation; secondary is biological.
Wastewater treatment involves distinct stages to remove various contaminants. Primary treatment is a physical process that uses screening and sedimentation to remove large solids and suspended particles. Secondary treatment follows as a biological process, where microorganisms are used to decompose dissolved organic matter. Together, these stages significantly reduce the pollutant load of sewage before it is either reused or safely released.

85. (A) Lead (Pb) — 10 $\mu g/m^3$.
The National Ambient Air Quality Standards define permissible limits for various pollutants to protect public health. While the annual standards for particulate matter and sulfur dioxide are strictly monitored, the limit for lead is set very low, at zero point five micrograms per cubic meter, due to its high toxicity. A value of ten would far exceed safe levels and represent a hazard.

86. (D) Persistent toxin concentration increases at higher trophic levels.
Biomagnification is an ecological process where the concentration of persistent, fat-soluble toxins increases as they move up the food chain. This happens because predators consume many prey organisms, each containing a small amount of the pollutant. Consequently, top predators, including humans and birds of prey, often face the highest risks of physiological damage from substances like heavy metals or synthetic pesticides.

87. (C) I and III
The Environmental Impact Assessment process is designed to ensure that developmental projects are ecologically and socially sustainable. It evaluates both potential benefits and adverse impacts on local communities. While Category B projects are appraised at the state level by expert committees, Category A projects require central clearance. Public hearings are a vital component of this process, providing a platform for stakeholder concerns.

88. (C) Directly prosecuting international climate change violators in the ICJ.
State Pollution Control Boards have extensive mandates to manage environmental quality within their jurisdictions. Their functions include planning state-wide pollution prevention programs, inspecting industrial sites, and advising state governments on environmental policy. However, they do not possess the authority to prosecute international cases in the International Court of Justice, as such matters are handled by national governments and international bodies.

89. (A) Collection, Dismantling, Shredding, Metal Extraction.
Formalized e-waste recycling follows a specific operational flow to maximize resource recovery and minimize environmental harm. The process begins with the systematic collection of discarded devices. These items are then dismantled to separate different components. Shredding follows to reduce the material size for further processing. Finally, advanced techniques are used for metal extraction to recover valuable materials from electronic circuitry.

90. (A) Kidney failure in vultures scavenging on treated carcasses.
The ban on the veterinary use of diclofenac in India was a critical response to a massive decline in vulture populations. Vultures that scavenged on the carcasses of cattle recently treated with this anti-inflammatory drug suffered from acute kidney failure and visceral gout. This ecological catastrophe highlighted the unintended consequences of certain pharmaceuticals on wildlife and the importance of monitoring drug impacts.

91. (A) Both A and R are true and R is the correct explanation of A.
Electrostatic precipitators are vital air pollution control devices used in coal-fired power plants. They function by applying an electrical charge

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108. (B) High-level radioactive spent fuel.
Municipal solid waste typically comprises the everyday items discarded by households and commercial establishments. Common constituents include organic food waste, paper, plastics, and yard trimmings. However, high-level radioactive spent fuel from nuclear reactors is a specialized category of hazardous waste. It requires extremely stringent handling, containment, and long-term storage protocols that are entirely separate from ordinary systems used for garbage.

109. (A) Evaporation, Condensation, Precipitation, Infiltration.
The hydrological cycle plays a vital role in the natural self-purification of the environment. Evaporation leaves behind many impurities, providing clean water vapor. Condensation and subsequent precipitation return this water to the Earth's surface. As water moves through the ground during infiltration, soil layers act as a natural filter, removing many suspended particles and contaminants to maintain resource quality.

110. (C) Establishing formal recycling infrastructure and strict EPR enforcement.
Addressing the rapid growth of electronic waste requires a comprehensive and formalized approach. Establishing specialized recycling facilities ensures that hazardous components are handled safely and valuable materials are recovered efficiently. Furthermore, strict enforcement of extended producer responsibility is essential, as it holds manufacturers accountable for the end-of-life management. These measures prevent environmental contamination from informal processing of electronics.

111. (A) Both A and R are true and R is the correct explanation of A.
Indoor air pollution from traditional biomass cookstoves is a major public health concern in rural areas. The incomplete combustion of wood, dung, or crop residues in poorly ventilated spaces releases high concentrations of fine particulate matter and carbon monoxide. Prolonged exposure to these pollutants leads to severe respiratory diseases, particularly among women and children who spend time near cooking.

112. (D) Cultural Eutrophication.
Eutrophication is a natural aging process for water bodies, but human activities can significantly accelerate it. This phenomenon, known as cultural eutrophication, occurs when nutrient-rich wastewater from agricultural runoff or sewage is released into lakes and rivers. The resulting explosion of algal growth depletes dissolved oxygen levels and disrupts the entire aquatic ecosystem, leading to a loss of biodiversity.

113. (A) P-II, Q-I, R-IV, S-III
Environmental governance involves several specialized agencies with distinct responsibilities. State Level Environment Impact Assessment Authorities evaluate Category B projects for clearance. State Pollution Control Boards are responsible for monitoring emissions and granting mandatory operational consents. SIPCOT focuses on developing industrial infrastructure and estates. Meanwhile, the Swachh Bharat Mission (Urban) addresses municipal challenges like solid waste management and achieving ODF status.

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114. (D) A single, identifiable source like a factory discharge pipe.
Point source pollution refers to contaminants that enter the environment from a single, clearly identifiable location. Typical examples include discharge pipes from industrial facilities or municipal sewage treatment plants. Because the source is localized, it is generally easier to monitor, regulate, and implement specific control technologies. This contrasts with non-point source pollution, which originates from broad and diffuse areas.

115. (A) Fluoride — Skeletal and dental fluorosis.
Waterborne pollutants have specific health impacts depending on their chemical or biological nature. Excessive intake of fluoride through drinking water is well-documented to cause both dental and skeletal fluorosis. Other contaminants are linked to different conditions; for instance, nitrates are associated with methemoglobinemia, while mercury causes Minamata disease. Understanding these relationships is vital for establishing safe drinking water standards.

134. (D) Fee on carbon content of fuels to reduce GHG emissions.
A carbon tax is an economic instrument designed to reduce greenhouse gas emissions by placing a price on the carbon content of fossil fuels. By increasing the cost of carbon-intensive energy sources, the tax encourages industries to switch to cleaner alternatives or improve energy efficiency. This market-based approach aims to internalize the external environmental costs of carbon and mitigate climate change.

135. (B) SAFAR (System of Air Quality and Weather Forecasting And Research) — Predicts and monitors urban air quality.
Monitoring environmental quality in India involves several specialized initiatives and organizations. SAFAR is a significant system that provides location-specific information on air quality and weather in major urban areas. Other organizations have distinct roles; the Central Pollution Control Board is a statutory body, while NEERI focuses on environmental engineering. These entities provide data and expertise necessary for effective pollution management.

136. (C) 5 mm.
Microplastics are defined as small plastic particles, typically measuring less than five millimeters in diameter. They originate from two main sources: primary microplastics manufactured for specific uses, and secondary microplastics resulting from the breakdown of larger plastic debris. Their small size makes them difficult to remove from the environment and allows them to be easily ingested by a range of organisms.

137. (B) I, II and III
Modern agricultural practices have diverse impacts on the environment. The intensive use of nitrogenous fertilizers is a major source of groundwater nitrate contamination. In many regions, the seasonal burning of crop residues significantly contributes to severe air pollution and smog formation. Additionally, the widespread application of pesticides can harm beneficial insect populations, such as bees, which are essential for pollination.

138. (A) Methylmercury.
Minamata disease is a severe neurological condition caused by chronic mercury poisoning. It first gained international attention following the release of methylmercury from a chemical factory into a local bay in Japan. This toxic compound entered the marine food chain and became highly concentrated in fish. People who consumed the contaminated seafood suffered from devastating health effects, highlighting the dangers of pollution.

139. (A) III, II, IV, I
Global environmental governance has evolved through a series of landmark agreements addressing diverse challenges. The Montreal Protocol was adopted in nineteen-eighty-seven to protect the ozone layer. This was followed by the Kyoto Protocol in nineteen-ninety-seven, which focused on reducing greenhouse gas emissions. Most recently, the Paris Agreement of twenty-fifteen represents a significant global commitment to limiting the rise in global temperatures.

140. (B) III, IV and V.
Industrial pollution in India significantly impacts various ecosystems across both inland and coastal regions. Challenges include groundwater contamination from tanneries in Vellore and high dissolved solids in the Noyyal river. Contrary to some claims, regions like Ennore have faced substantial industrial pressure rather than remaining pristine. Furthermore, industrial environmental issues are not confined to the coast, as many interior areas.

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dominant activities. Tirupur is known for textile-related water issues, while Vellore is associated with tannery effluents. Thoothukudi has faced significant concerns regarding emissions from smelting. However, Nilgiris is an inland mountain district and is not subject to coastal oil spill pollution, focusing instead on hilly ecosystems.

126. (C) Internalizes environmental costs into product market prices.
Extended Producer Responsibility is a strategic policy framework that extends a manufacturer's accountability for a product to the post-consumer stage. A key feature is that it encourages companies to internalize the costs of recycling and disposal into the market price. This creates a financial incentive for producers to design more sustainable and easily recyclable goods, reducing the overall waste burden.

127. (C) I and II
Noise pollution is a significant environmental stressor with diverse impacts on human well-being. Chronic exposure to high noise levels is linked to cardiovascular problems, including hypertension and increased heart rates. Furthermore, noise significantly impairs cognitive development, memory, and reading comprehension in children. Contrary to some beliefs, noise pollution causes various physiological and psychological issues across the entire human population.

128. (C) Ground-level ozone formation from vehicular exhaust.
Environmental degradation can result from both natural processes and human activities. Volcanic eruptions, forest fires triggered by lightning, and natural dust storms are examples of ecological changes caused by nature. In contrast, the formation of ground-level ozone is an anthropogenic phenomenon driven by emissions from motor vehicles and industrial activities. This distinction is crucial for developing targeted control strategies.

129. (A) Coagulation, Flocculation, Sedimentation, Filtration, Disinfection.
Municipal water treatment plants follow a structured series of steps to ensure drinking water safety. The process begins with coagulation and flocculation, where chemicals are added to clump small particles together. These larger clumps then settle during the sedimentation stage. Filtration removes the remaining suspended matter by passing water through filters. Finally, disinfection using chlorine or ultraviolet light kills pathogens.

130. (D) Escherichia coli (E. coli).
Escherichia coli is universally recognized as a primary indicator organism for detecting fecal contamination in water. While most strains of this bacterium are harmless, its presence signifies that the water has been contaminated with human or animal waste. This indicates a high probability that other dangerous pathogens may also be present, necessitating strict monitoring of drinking water quality and safety.

131. (C) A is true but R is false.
The rapid proliferation of water hyacinth is a classic indicator of nutrient-enriched or eutrophic water bodies. Although this plant has the ability to absorb certain heavy metals and nutrients, its uncontrolled growth often leads to severe ecological problems. It forms dense mats that block sunlight and deplete dissolved oxygen, ultimately harming native aquatic life and reducing overall local biological diversity.

132. (C) Incineration.
Incineration is a waste treatment process that involves the controlled combustion of organic substances in municipal solid waste. By burning waste at extremely high temperatures, the process significantly reduces the volume of material that needs to be landfilled. Modern incineration facilities are often designed as waste-to-energy plants, capturing the heat generated during combustion to produce steam and sustainable electrical power.

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133. (A) P-II, Q-I, R-III, S-IV
The management of bio-medical waste relies on a strict color-coded system to ensure safe disposal. Yellow bins are designated for waste like anatomical parts, which are typically incinerated. Red bins contain recyclable plastics that are autoclaved and shredded. White containers are used for sharps, requiring disinfection and sterilization. Finally, blue bins are used for glassware and metallic body implants.

composting or biomethanation are preferable as they recycle nutrients. The most sustainable strategy is always to reduce waste at the source and reuse.

100. (C) III, IV and V.
The National Green Tribunal is a specialized judicial body designed for the swift resolution of environmental disputes. It primarily handles civil cases arising from the implementation of several key environmental laws. While it operates with specific procedural mandates and has various regional benches, its primary focus remains on civil matters rather than criminal prosecutions or wildlife poaching cases handled by authorities.

101. (A) Both A and R are true and R is the correct explanation of A.
The transition to Bharat Stage six emission standards represented a major technical challenge for India's oil refineries. To meet the stringent requirements, refineries had to implement advanced hydro-desulfurization processes to reduce sulfur levels. This was necessary because the norms mandate a maximum sulfur content of only ten parts per million in fuel, which is essential for modern emission systems.

102. (D) Methemoglobinemia.
High nitrate levels in drinking water pose a significant health risk, particularly to infants. When ingested, nitrates are converted into nitrites, which interfere with the blood's ability to carry oxygen by forming methemoglobin. This condition, known as methemoglobinemia or blue baby syndrome, can lead to respiratory distress and a characteristic bluish skin tint. Preventing nitrate runoff is crucial for health.

103. (A) P-IV, Q-III, R-II, S-I
Noise pollution regulations in India specify different permissible limits based on the primary use of an area. Industrial zones have the highest daytime limit at seventy-five decibels, followed by commercial areas at sixty-five. Residential zones are more strictly regulated with a limit of fifty-five decibels, while silence zones, such as those near hospitals and schools, have the most stringent limit.

104. (C) Trapping of outgoing infrared radiation by CO_2 and methane.
The greenhouse effect is a natural process where certain atmospheric gases trap heat radiating from the Earth's surface. Gases such as carbon dioxide and methane allow incoming solar radiation to pass through but absorb the outgoing long-wave infrared radiation. This process warms the atmosphere, maintaining temperatures suitable for life. However, human activities have intensified this effect, leading to global warming.

105. (D) Hazardous waste — Clean cardboard and dry leaves.
Solid waste is categorized to facilitate proper management and recycling. Biodegradable waste includes organic matter like food scraps, while paper and glass are recyclable. Inert waste consists of stable materials like construction debris. Clean cardboard and dry leaves are actually biodegradable or recyclable materials. In contrast, hazardous waste contains toxic, flammable, or reactive substances that pose a significant health threat.

106. (A) Consists of an oxidizing environment containing ozone and PAN pollutants.
Photochemical smog is a modern air pollution challenge prevalent in sunny, urban environments with high vehicular traffic. It is characterized by an oxidizing atmosphere formed through complex reactions between nitrogen oxides and volatile organic compounds. Key components include ground-level ozone and peroxyacetyl nitrate. Unlike sulfurous smog, it typically peaks during the brightest part of the day when radiation is intense.

107. (C) I and II
Coastal waters are increasingly threatened by diverse human activities. The discharge of ballast water from international ships can introduce invasive species that disrupt local marine ecosystems. Oil spills create a surface film that blocks sunlight and hinders gas exchange, severely impacting the productivity of marine phytoplankton. Furthermore, sensitive coastal ecosystems like mangroves and coral reefs are vulnerable to pollution.

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CHAPTER 12

Climate Change, Green Energy, Geographical Landmarks and Current Affairs

1. Read the following statements regarding Greenhouse Gases (GHGs):
I. Carbon dioxide has a higher Global Warming Potential (GWP) than Methane.
II. Nitrous oxide is primarily emitted from agricultural activities.
III. Water vapour is the most abundant natural greenhouse gas in the atmosphere.
Which of the above statement(s) is/are correct?
(A) I and II
(B) II and III
(C) I only
(D) II only
(E) Answer not known

2. The following question consists of two statements, an Assertion (A) and a Reason (R). Select the correct answer using the codes given below:
Assertion (A): Anthropogenic activities have significantly accelerated the natural greenhouse effect.
Reason (R): The burning of fossil fuels and deforestation increase the concentration of carbon dioxide in the atmosphere.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

3. Match List I with List II and select the correct answer using the codes given below:
List I: (Greenhouse Gases)
P. Carbon dioxide
Q. Methane
R. Nitrous oxide
S. Chlorofluorocarbons
List II: (Primary Anthropogenic Sources)
I. Paddy fields and livestock
II. Fossil fuel combustion
III. Refrigeration and air conditioning
IV. Nitrogenous fertilizers
(A) P-II, Q-I, R-IV, S-III
(B) P-I, Q-II, R-III, S-IV
(C) P-II, Q-IV, R-I, S-III
(D) P-III, Q-I, R-IV, S-II
(E) Answer not known

4. Identify the correctly matched pair regarding climate change terminology:
(A) Global Warming - Long-term alteration of temperature and typical weather patterns in a place
(B) Climate Change - Only the recent rise in the global average temperature near the earth's surface
(C) Albedo Effect - The fraction of solar energy reflected from the Earth back into space
(D) Anthropogenic - Natural processes occurring without human intervention
(E) Answer not known

5. Select the correct chronological order of the publication of Intergovernmental Panel on Climate Change (IPCC) Assessment Reports:
(A) AR1, AR3, AR2, AR4, AR5, AR6
(B) AR1, AR2, AR3, AR4, AR5, AR6
(C) AR1, AR4, AR2, AR3, AR6, AR5
(D) AR2, AR1, AR3, AR4, AR5, AR6
(E) Answer not known

6. Arrange the following greenhouse gases in ascending order based on their Global Warming Potential (GWP) over a 100-year period:
1. Carbon dioxide

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(C) I only
(D) III only
(E) Answer not known

22. The following question consists of two statements, an Assertion (A) and a Reason (R). Select the correct answer using the codes given below:
Assertion (A): The principle of Common But Differentiated Responsibilities and Respective Capabilities (CBDR-RC) is a cornerstone of the UNFCCC.
Reason (R): Developed countries have historically contributed more to greenhouse gas emissions and possess greater financial and technological resources to address climate change.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

23. Match List I with List II and select the correct answer using the codes given below:
List I: (COP Meetings)
P. COP 21
Q. COP 26
R. COP 27
S. COP 28
List II: (Host Cities)
I. Glasgow
II. Sharm el-Sheikh
III. Dubai
IV. Paris
(A) P-IV, Q-I, R-II, S-III
(B) P-IV, Q-II, R-I, S-III
(C) P-I, Q-IV, R-III, S-II
(D) P-III, Q-I, R-II, S-IV
(E) Answer not known

24. Identify the correctly matched pair regarding India's Panchamrit targets announced at COP 26:
(A) Non-fossil energy capacity of 500 GW - By 2040
(B) Reduction of total projected carbon emissions by 1 billion tonnes - By 2050
(C) 50% of energy requirements from renewable energy - By 2030
(D) Achieving the target of Net Zero - By 2060
(E) Answer not known

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25. Select the correct chronological order of the following landmark climate conferences:
(A) Rio Earth Summit, Paris Agreement, Kyoto Protocol, COP 28 Dubai
(B) Kyoto Protocol, Rio Earth Summit, Paris Agreement, COP 28 Dubai
(C) Rio Earth Summit, Kyoto Protocol, Paris Agreement, COP 28 Dubai
(D) Kyoto Protocol, Paris Agreement, Rio Earth Summit, COP 28 Dubai
(E) Answer not known

26. Arrange the following steps reflecting the progression of India's formal climate commitments:
1. Launch of National Action Plan on Climate Change (NAPCC)
2. Announcement of Panchamrit targets at Glasgow
3. Submission of First Nationally Determined Contributions (NDCs)
4. Submission of Long-Term Low Emission Development Strategy (LT-LEDS)
(A) 1, 3, 2, 4
(B) 1, 2, 3, 4
(C) 3, 1, 4, 2
(D) 2, 1, 3, 4
(E) Answer not known

27. Read the following statements regarding the outcomes of COP 28 in Dubai:
I. Nations agreed to operationalize the Loss and Damage Fund.
II. There was a historic consensus to transition away from fossil fuels in energy systems.
III. Global Renewable Energy and Energy Efficiency Pledge aimed to triple renewable energy capacity by 2030.
IV. India formally committed to completely phase out coal power by 2035.
Which of the above statement(s) is/are correct?
(A) I, II and III
(B) II, III and IV
(C) I and II
(D) III and IV
(E) Answer not known

average near-surface temperature in 2023 was approximately how much above the pre-industrial (1850-1900) baseline?
(A) 0.85°C
(B) 1.15°C
(C) 1.45°C
(D) 2.05°C
(E) Answer not known

13. Which of the following statements correctly describes the establishment of the IPCC?
(A) Established by the WMO and UNEP in 1988.
(B) Formed by the UN General Assembly in 1992.
(C) Created during the Rio Earth Summit in 1992.
(D) Set up under the Kyoto Protocol in 1997.
(E) Answer not known

14. Which of the following is NOT considered a natural cause of climate change?
(A) Large-scale volcanic eruptions
(B) Natural shifts in ocean currents
(C) Industrial fluorinated emissions
(D) Variations in total solar output
(E) Answer not known

15. The atmospheric lifetime of Methane is approximately how long, making it a short-lived but potent greenhouse gas?
(A) 1-2 years
(B) 12 years
(C) 50 years
(D) 120 years
(E) Answer not known

16. As Arctic ice melts due to global warming, the surface reflects less sunlight and absorbs more heat, causing further melting. This phenomenon is an example of:
(A) Negative feedback loop
(B) Carbon sequestration
(C) Positive feedback loop
(D) Greenhouse effect reversal
(E) Answer not known

17. The difference between incoming energy from the sun and outgoing energy from the Earth is defined in climate science as:
(A) Carbon footprint
(B) Radiative forcing
(C) Climate sensitivity
(D) Thermal expansion
(E) Answer not known

18. Which of the following greenhouse gases are classified as completely anthropogenic (synthetic) with no natural sources?
(A) Carbon dioxide and Methane
(B) Nitrous oxide and Ozone
(C) Water vapour and Carbon monoxide
(D) Hydrofluorocarbons and Perfluorocarbons
(E) Answer not known

19. When comparing Nitrous oxide (N_2O) to Carbon dioxide (CO_2), which statement is accurate?
(A) N_2O is less abundant with a global warming potential 300 times that of CO_2.
(B) N_2O is more abundant with a significantly lower global warming potential.
(C) Both have identical global warming potential but unique atmospheric lifetimes.
(D) N_2O contributes exclusively to ozone depletion rather than global warming.
(E) Answer not known

20. The primary warning issued by the IPCC AR6 Synthesis Report emphasizes the urgent need for which of the following?
(A) Implementation of immediate migration for coastal populations.
(B) Global cessation of all agricultural activities by the next decade.
(C) Deep and rapid emission reductions across all economic sectors.
(D) Focusing on adaptation measures as mitigation is no longer possible.
(E) Answer not known

21. Read the following statements about the Paris Agreement 2015:
I. It aims to hold the increase in global average temperature to well below 2°C above pre-industrial levels.
II. It requires all countries to submit updated Nationally Determined Contributions (NDCs) every 5 years.
III. It enforces mandatory financial penalties for nations failing to meet their NDC targets.
Which of the above statement(s) is/are correct?
(A) I and II
(B) II and III

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R. Wind Energy
S. Biomass Energy
List II: (Underlying Technology/Concept)
I. Conversion of kinetic energy into electrical energy
II. Direct conversion of sunlight into electricity using semiconductors
III. Combustion of organic matter to produce heat or electricity
IV. Using mirrors to focus sunlight to heat a fluid
(A) P-II, Q-IV, R-I, S-III
(B) P-IV, Q-II, R-I, S-III
(C) P-II, Q-I, R-IV, S-III
(D) P-I, Q-IV, R-II, S-III
(E) Answer not known

64. Identify the correctly matched pair regarding major Solar Power Plants and their locations:
(A) Bhadla Solar Park - Kurnool, Andhra Pradesh
(B) Pavagada Solar Park - Jodhpur, Rajasthan
(C) Kamuthi Solar Power Project - Ramanathapuram, Tamil Nadu
(D) Rewa Ultra Mega Solar - Kutch, Gujarat
(E) Answer not known

65. Select the correct sequence of India's renewable energy sources arranged in descending order based on their total installed capacity:
(A) Solar power, Wind power, Large Hydropower, Biomass power
(B) Wind power, Solar power, Large Hydropower, Biomass power
(C) Large Hydropower, Solar power, Wind power, Biomass power
(D) Solar power, Large Hydropower, Wind power, Biomass power
(E) Answer not known

66. Arrange the following components of the PM KUSUM scheme based on their scale of deployment from individual to grid level:
1. Installation of standalone off-grid solar water pumps
2. Solarization of existing grid-connected agriculture pumps
3. Setting up of decentralized ground-mounted grid-connected solar power plants
(A) 1, 2, 3
(B) 3, 2, 1
(C) 1, 3, 2
(D) 2, 1, 3
(E) Answer not known

67. Read the following statements regarding the National Solar Mission (NSM):
I. It was launched in 2010 as part of the National Action Plan on Climate Change.
II. Its initial target of 20 GW by 2022 was revised upward to 100 GW.
III. It focuses exclusively on rooftop solar installations.
IV. The development of Ultra Mega Solar Parks is a key strategy under this mission.
Which of the above statement(s) is/are correct?
(A) I, II and IV
(B) II, III and IV
(C) I and II
(D) III and IV
(E) Answer not known

68. The following question consists of two statements, an Assertion (A) and a Reason (R). Select the correct answer using the codes given below:
Assertion (A): The PM KUSUM scheme significantly aids in water conservation in Indian agriculture.
Reason (R): It completely bans the extraction of groundwater for farming purposes.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

69. Match List I with List II and select the correct answer using the codes given below:
List I: (Components of PM-KUSUM Scheme)
P. Component A
Q. Component B
R. Component C
S. Objective
List II: (Specific Targets)
I. Installation of standalone solar agriculture pumps
II. Solarization of grid-connected agriculture pumps
III. Setting up of decentralized solar power

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28. The following question consists of two statements, an Assertion (A) and a Reason (R). Select the correct answer using the codes given below:

Assertion (A): The Green Climate Fund (GCF) was established to limit or reduce greenhouse gas emissions in developing countries and to help vulnerable societies adapt to the unavoidable impacts of climate change.

Reason (R): The Paris Agreement explicitly dissolved the GCF and replaced it entirely with the Loss and Damage Fund.

(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

29. Match List I with List II and select the correct answer using the codes given below:

List I: (Climate Mechanisms/Funds)
P. Clean Development Mechanism
Q. Loss and Damage Fund operationalization
R. Global Stocktake
S. Green Climate Fund establishment

List II: (Associated Frameworks)
I. COP 16 (Cancun)
II. COP 28 (Dubai)
III. Kyoto Protocol
IV. Paris Agreement

(A) P-III, Q-II, R-IV, S-I
(B) P-IV, Q-II, R-III, S-I
(C) P-III, Q-I, R-IV, S-II
(D) P-I, Q-IV, R-II, S-III
(E) Answer not known

30. Identify the incorrectly matched pair regarding climate commitments:
(A) Net Zero by 2050 - United States
(B) Net Zero by 2060 - China
(C) Net Zero by 2040 - Russia
(D) Net Zero by 2070 - India
(E) Answer not known

31. Read the following statements about the United Nations Framework Convention on Climate Change (UNFCCC):
I. It was adopted in 1992 at the Rio Earth Summit.
II. It entered into force in 1994.
III. The COP is the supreme decision-making body of the Convention.
IV. It sets binding limits on greenhouse gas emissions for individual countries.
V. It has near-universal membership globally.

Which of the above statement(s) is/are correct?
(A) I, II, III and V
(B) II, III, IV and V
(C) I, III and IV
(D) I, II and IV
(E) Answer not known

32. What is the primary significance of the Loss and Damage fund operationalized at COP 28?
(A) Financing the construction of nuclear power plants within developed nations.
(B) Providing subsidies to fossil fuel companies transitioning toward renewables.
(C) Compensating vulnerable nations for damage that cannot be adapted to.
(D) Exclusively funding major afforestation projects across the Amazon basin.
(E) Answer not known

33. Under India's updated Nationally Determined Contributions (NDCs) submitted to the UNFCCC in 2022, India committed to reducing the emissions intensity of its GDP by what percentage by 2030, compared to 2005 levels?
(A) 33-35%
(B) 45%
(C) 50%
(D) 65%
(E) Answer not known

34. Which of the following statements correctly describes the 'Global Stocktake' under the Paris Agreement?
(A) A carbon trading market specifically established for developing nations.
(B) A process to assess collective progress toward Paris Agreement goals.
(C) An inventory of all remaining fossil fuel reserves found globally.
(D) A penalty mechanism for countries failing to meet their NDC targets.
(E) Answer not known

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35. Which of the following is NOT one of the five elements of India's "Panchamrit" presented at COP 26?
(A) Meeting 50% of energy requirements from renewable energy by 2030
(B) Reaching non-fossil energy capacity to 500 GW by 2030
(C) Reducing the total projected carbon emissions by 1 billion tonnes by 2030
(D) Achieving 100% electric vehicle sales by 2030
(E) Answer not known

36. Under Article 6 of the Paris Agreement, countries can cooperate to meet their climate targets. This mechanism primarily facilitates which of the following?
(A) International carbon markets and trading of emission reductions
(B) Free transfer of nuclear technology
(C) Waiving of intellectual property rights on solar panels
(D) Relocation of climate refugees to developed countries
(E) Answer not known

37. In the context of the Paris Agreement, 'Nationally Determined Contributions' (NDCs) can best be defined as:
(A) National climate action plans for emissions reduction and adaptation.
(B) The specific financial quota each nation is required to pay the UN.
(C) Binding international laws standardizing emission levels for all countries.
(D) The historical amount of greenhouse gases emitted by a nation since 1850.
(E) Answer not known

38. A significant shift in terminology occurred between COP 26 and recent climate discourses regarding fossil fuels. COP 26 focused on the "phase down" of unabated coal power. What was the landmark language adopted at COP 28?
(A) "Phase out" of all fossil fuels immediately
(B) "Transitioning away" from fossil fuels in energy systems
(C) "Scaling up" fossil fuel subsidies
(D) "Banning" of oil and gas exploration by 2025
(E) Answer not known

39. Which of the following features characterizes India's Long-Term Low Emission Development Strategy (LT-LEDS)?
(A) Focus on rational utilization of national resources with due regard to energy security
(B) Complete reliance on imported natural gas by 2050
(C) Immediate shutting down of all coal-fired power plants
(D) Rejection of nuclear power expansion
(E) Answer not known

40. A major advantage of implementing a Carbon Tax as a climate mitigation strategy is that it provides a clear price signal to reduce emissions. What is its primary disadvantage in developing nations?
(A) Leading to a massive and immediate increase in total forest cover.
(B) Regressive impacts on low-income populations via higher energy costs.
(C) Encouraging the rapid and unplanned depletion of renewable resources.
(D) Preventing all future technological innovation within the energy sector.
(E) Answer not known

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41. Read the following statements regarding the impacts of glacial retreat in the Himalayas on India:
I. It leads to the formation of unstable glacial lakes, increasing the risk of Glacial Lake Outburst Floods (GLOFs).
II. It will result in a permanent increase in the dry-season flow of perennial rivers like the Ganges.
III. It alters the microclimate of the region, affecting local biodiversity.
Which of the above statement(s) is/are correct?
(A) I and III
(B) I and II
(C) II only
(D) III only
(E) Answer not known

42. The following question consists of two statements, an Assertion (A) and a Reason (R). Select the correct answer using the codes given below:
Assertion (A): Coastal districts of Tamil Nadu are highly vulnerable to seawater intrusion into

freshwater aquifers.
Reason (R): Sea-level rise combined with over-extraction of groundwater reverses the hydraulic gradient along the coast.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

43. Match List I with List II and select the correct answer using the codes given below:
List I: (Vulnerability Aspects in Tamil Nadu)
P. Severe coastal erosion
Q. Threat to mangrove ecosystems
R. Heatwave intensity
S. Land subsidence due to sea level rise threat
List II: (Affected Districts/Regions)
I. Vellore and Tiruvallur
II. Kanyakumari
III. Pichavaram (Cuddalore)
IV. Nagapattinam
(A) P-II, Q-III, R-I, S-IV
(B) P-IV, Q-III, R-II, S-I
(C) P-II, Q-IV, R-I, S-III
(D) P-III, Q-II, R-IV, S-I
(E) Answer not known

44. Identify the correctly matched pair regarding carbon-related concepts:
(A) Carbon Footprint - The total amount of oxygen consumed by an individual
(B) Carbon Sink - A natural environment that emits more carbon than it absorbs
(C) Carbon Sequestration - The process of capturing and storing atmospheric carbon dioxide
(D) Carbon Credit - A tax levied on the carbon content of fuels
(E) Answer not known

45. Select the correct sequence of events illustrating the cascade effect leading to climate migration:
(A) Climate Migration, Loss of Livelihood, Extreme Weather Event, Crop Failure
(B) Extreme Weather Event, Crop Failure, Loss of Livelihood, Climate Migration
(C) Crop Failure, Climate Migration, Extreme Weather Event, Loss of Livelihood
(D) Loss of Livelihood, Extreme Weather Event, Climate Migration, Crop Failure
(E) Answer not known

46. Arrange the following coastal states in descending order of their total coastline length, which dictates their overall spatial vulnerability to sea-level rise:
1. Gujarat
2. Tamil Nadu
3. Andhra Pradesh
4. Maharashtra
(A) 1, 3, 2, 4
(B) 1, 2, 3, 4
(C) 3, 1, 2, 4
(D) 1, 4, 3, 2
(E) Answer not known

47. Read the following statements about climate change impacts on Indian agriculture:
I. Irregular rainfall patterns and delayed monsoons adversely affect the sowing of Kharif crops.
II. Increased nocturnal temperatures generally enhance the yield of wheat.
III. Rising CO_2 levels can temporarily boost photosynthesis in some crops, but this is offset by heat stress.
IV. The incidence of agricultural pests and diseases is projected to increase.
Which of the above statement(s) is/are correct?
(A) I, III and IV
(B) I, II and IV
(C) II and III
(D) I and II
(E) Answer not known

48. The following question consists of two statements, an Assertion (A) and a Reason (R). Select the correct answer using the codes given below:
Assertion (A): The cultivation of paddy in Tamil Nadu's Cauvery delta is becoming increasingly challenging.
Reason (R): Climate change induced irregular rainfall and increased cyclonic disturbances frequently cause inundation and crop loss during the harvest season.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct

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2. Methane
3. Nitrous oxide
4. Chlorofluorocarbon (CFC-12)

(A) 1, 3, 2, 4
(B) 1, 2, 3, 4
(C) 2, 1, 3, 4
(D) 4, 3, 2, 1
(E) Answer not known

7. Read the following statements regarding the IPCC Sixth Assessment Report (AR6):

I. It states that human influence has unequivocally warmed the atmosphere, ocean and land.
II. Global surface temperature will continue to increase until at least the mid-century under all emissions scenarios considered.
III. It projects that global warming of 1.5°C and 2°C will be exceeded during the 21st century unless deep reductions in CO_2 occur.
IV. It concludes that sea-level rise is completely reversible within the next decade if net-zero is achieved.

Which of the above statement(s) is/are correct?
(A) I, II and III
(B) II, III and IV
(C) I and II
(D) III and IV
(E) Answer not known

8. The following question consists of two statements, an Assertion (A) and a Reason (R). Select the correct answer using the codes given below:

Assertion (A): Water vapour is a powerful greenhouse gas but is not directly targeted by global emissions reduction treaties like the Kyoto Protocol.

Reason (R): The concentration of water vapour in the atmosphere is primarily controlled by temperature rather than direct human emissions.

(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

9. Match List I with List II and select the correct answer using the codes given below:

List I: (IPCC Assessment Reports)
P. First Assessment Report (FAR)
Q. Third Assessment Report (TAR)
R. Fifth Assessment Report (AR5)
S. Sixth Assessment Report (AR6)

List II: (Publication Years)
I. 2001
II. 2014
III. 1990
IV. 2021-2023

(A) P-III, Q-I, R-II, S-IV
(B) P-III, Q-II, R-I, S-IV
(C) P-I, Q-III, R-IV, S-II
(D) P-IV, Q-I, R-II, S-III
(E) Answer not known

10. Identify the incorrectly matched pair regarding climate organizations:

(A) IPCC - Intergovernmental Panel on Climate Control
(B) UNEP - United Nations Environment Programme
(C) WMO - World Meteorological Organization
(D) UNFCCC - United Nations Framework Convention on Climate Change
(E) Answer not known

11. Read the following statements about the mechanism of global warming:

I. Solar radiation passes through the clear atmosphere.
II. Most radiation is absorbed by the Earth's surface and warms it.
III. Infrared radiation is emitted from the Earth's surface.
IV. Greenhouse gases absorb infrared radiation, preventing it from escaping into space.
V. Atmospheric cooling occurs when greenhouse gases reflect incoming solar radiation.

Which of the above statement(s) is/are correct?
(A) I, II, III and V
(B) I, II, III and IV
(C) II, III and V
(D) I, III and IV
(E) Answer not known

12. According to recent World Meteorological Organization (WMO) reports, the global

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(C) 2005
(D) 2012
(E) Answer not known

56. The "Cap and Trade" system is a market-based approach to controlling pollution. How does this system incentivize emission reductions?
(A) Taxing every unit of emission produced by a registered company.
(B) Setting emission limits and allowing trading of pollution allowances.
(C) Shutting down companies that exceed their emission caps immediately.
(D) Providing free and unlimited allowances to the highest polluting firms.
(E) Answer not known

57. Which of the following falls under the category of a "Climate Adaptation" measure rather than "Climate Mitigation"?
(A) Installing solar panels on government buildings
(B) Developing drought-resistant crop varieties
(C) Transitioning from coal to wind power
(D) Implementing carbon capture and storage technologies
(E) Answer not known

58. An increase in Sea Surface Temperature (SST) in the Bay of Bengal is most likely to infer which of the following consequences for Tamil Nadu?
(A) Decreased humidity in coastal cities
(B) Intensification and rapid development of tropical cyclones
(C) Expansion of coastal mangrove forests naturally
(D) Reduction in coastal erosion rates
(E) Answer not known

59. Which coastal district in Tamil Nadu is highly vulnerable to sea-level rise due to its low elevation and the presence of the biologically diverse Point Calimere sanctuary?
(A) Kanyakumari
(B) Tirunelveli
(C) Nagapattinam
(D) Chengalpattu
(E) Answer not known

60. A major criticism of the carbon trading mechanism is that it:
(A) Forcing developing countries to industrialize at a much faster rate.
(B) Allowing corporations to continue polluting by purchasing cheap credits.
(C) Completely eliminating any further need for technological innovation.
(D) Resulting in the immediate bankruptcy of all fossil fuel companies.
(E) Answer not known

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61. Read the following statements regarding the advantages of Renewable Energy over Fossil Fuels:
I. Renewable energy sources generally produce little to no greenhouse gas emissions.
II. Renewable energy sources are subject to geopolitical supply chain disruptions identical to oil and gas.
III. The operational and maintenance costs of renewable energy plants are generally lower over their lifetime.
Which of the above statement(s) is/are correct?
(A) I and III
(B) I and II
(C) II only
(D) III only
(E) Answer not known

62. The following question consists of two statements, an Assertion (A) and a Reason (R). Select the correct answer using the codes given below:
Assertion (A): Tamil Nadu is the leading state in India for wind energy generation.
Reason (R): The state possesses a long coastline and geographically advantageous mountain passes like the Palghat gap that channel high-speed winds.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

63. Match List I with List II and select the correct answer using the codes given below:
List I: (Renewable Energy Types)
P. Solar Photovoltaic
Q. Concentrated Solar Thermal

explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

49. Match List I with List II and select the correct answer using the codes given below:
List I: (Climate Adaptation Strategies)
P. Crop diversification
Q. Constructing seawalls
R. Rainwater harvesting
S. Early warning systems
List II: (Corresponding Sectors)
I. Disaster Management
II. Water Resources
III. Coastal Protection
IV. Agriculture
(A) P-IV, Q-III, R-II, S-I
(B) P-III, Q-IV, R-I, S-II
(C) P-IV, Q-II, R-III, S-I
(D) P-II, Q-III, R-IV, S-I
(E) Answer not known

50. Identify the incorrectly matched pair regarding the Kyoto Protocol mechanisms:
(A) Clean Development Mechanism (CDM) - Investment in emission-reduction projects in developing countries
(B) Joint Implementation (JI) - Emission-reduction projects between two developed nations
(C) Green Climate Fund - Primary financial mechanism established directly under the Kyoto Protocol
(D) Emissions Trading - Buying and selling of carbon credits among developed nations
(E) Answer not known

51. Read the following statements differentiating Carbon Neutrality and Net Zero:
I. Carbon neutrality generally refers only to balancing carbon dioxide emissions.
II. Net Zero implies balancing all greenhouse gas emissions, including methane and nitrous oxide.
III. Carbon neutrality allows for offsetting emissions without fundamentally changing internal operations.
IV. Net Zero requires deep decarbonization across the entire value chain before offsetting residual emissions.
V. Both terms have the exact same legal definition under the UNFCCC.
Which of the above statement(s) is/are correct?
(A) I, II, III and IV
(B) II, III, IV and V
(C) I, II and V
(D) I, III and V
(E) Answer not known

52. What is the current status of "Climate Refugees" under international law, such as the 1951 Refugee Convention?
(A) They are fully recognized and granted automatic asylum.
(B) They are recognized only if displaced by sea-level rise.
(C) They are not legally recognized as refugees under the 1951 Convention.
(D) They are classified as economic migrants with special visa privileges.
(E) Answer not known

53. Which of the following statements correctly explains the concept of a Carbon Credit?
(A) It is a loan provided by the World Bank for renewable energy projects.
(B) It is a tradable permit representing the right to emit one tonne of carbon dioxide or its equivalent.
(C) It is a penalty point given to industries that exceed their emission quotas.
(D) It is a physical currency used exclusively in environmental trading markets.
(E) Answer not known

54. Which of the following is NOT an anticipated direct impact of climate change on the coastal districts of Tamil Nadu?
(A) Accelerated coastal erosion
(B) Significant expansion of natural freshwater wetlands
(C) Increased frequency of extreme cyclonic storms
(D) Coral bleaching in the Gulf of Mannar
(E) Answer not known

55. In which year was the Kyoto Protocol, the first international treaty to mandate greenhouse gas emissions reductions, adopted?
(A) 1992
(B) 1997

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plants up to 2 MW
IV. De-dieselization of the farm sector
(A) P-III, Q-I, R-II, S-IV
(B) P-I, Q-II, R-III, S-IV
(C) P-III, Q-II, R-I, S-IV
(D) P-II, Q-I, R-IV, S-III
(E) Answer not known

70. Identify the incorrectly matched pair regarding wind farms and their locations in Tamil Nadu:
(A) Muppandal - Kanyakumari district
(B) Kayathar - Thoothukudi district
(C) Aralvaimozhi - Chennai district
(D) Kethanur - Tiruppur district
(E) Answer not known

71. Read the following statements comparing Solar Photovoltaic (PV) and Solar Thermal technologies:
I. Solar PV converts sunlight directly into electricity.
II. Solar Thermal utilizes heat to generate steam that drives a turbine.
III. Solar PV systems are highly efficient for large-scale utility heating.
IV. Solar Thermal technology is more suitable for integration with thermal energy storage.
V. Kamuthi Solar Power Project utilizes Solar Thermal technology.
Which of the above statement(s) is/are correct?
(A) I, II and IV
(B) I, III, IV and V
(C) II, III and V
(D) I, II, III and IV
(E) Answer not known

72. The Muppandal wind farm, one of the largest in India, owes its high wind energy potential primarily to which geographical feature?
(A) The funneling effect of wind through the Sengottai and Aralvaimozhi passes in the Western Ghats.
(B) Its location on the high altitude peaks of the Nilgiris.
(C) Its direct exposure to unhindered ocean currents in the Bay of Bengal.
(D) The artificial wind tunnels created by surrounding urban infrastructure.
(E) Answer not known

73. What is the total installed generation capacity of the Kamuthi Solar Power Project in Tamil Nadu, which was one of the largest single-location solar plants in the world at its completion?
(A) 248 MW
(B) 400 MW
(C) 648 MW
(D) 1000 MW
(E) Answer not known

74. Which of the following statements is correct regarding offshore wind energy potential in India?
(A) India currently has over 5 GW of installed offshore wind capacity.
(B) The coasts of Tamil Nadu and Gujarat have been identified as having the highest potential for offshore wind energy.
(C) Offshore wind farms face no environmental or marine ecosystem concerns.
(D) The wind speeds offshore are generally lower and more turbulent than onshore.
(E) Answer not known

75. Which of the following is NOT a primary objective of the PM KUSUM scheme?
(A) Providing day-time reliable power to farmers
(B) Centralizing rural power to mega-dams
(C) Increasing farmers' income by selling surplus power to the grid
(D) Reducing the agriculture sector's dependence on diesel
(E) Answer not known

76. Decentralized solar energy generation, such as rooftop solar, offers a significant advantage over centralized utility-scale solar farms by primarily reducing:
(A) Manufacturing costs of solar panels
(B) Transmission and distribution (T&D) losses
(C) The need for battery recycling
(D) The efficiency of the photovoltaic cells
(E) Answer not known

77. The "Photovoltaic effect" utilized in solar panels can be defined as:
(A) The generation of voltage and electric current in a material upon exposure to light.
(B) The heating of water using mirrors to reflect sunlight.
(C) The process by which plants convert

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Select the correct answer using the codes given below:
Assertion (A): The original Pamban Bridge was a marvel of early 20th-century engineering.
Reason (R): It was India's first sea bridge and featured a bascule section that could be raised to let ships pass.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

123. Match List I with List II and select the correct answer using the codes given below:
List I: (Geographical Landmarks of Tamil Nadu)
P. Point Calimere (Kodiakkarai)
Q. Pamban Bridge
R. Mukurthi National Park
S. Pichavaram Mangroves
List II: (Districts)
I. Ramanathapuram
II. Cuddalore
III. Nagapattinam
IV. Nilgiris
(A) P-III, Q-I, R-IV, S-II
(B) P-I, Q-III, R-II, S-IV
(C) P-III, Q-IV, R-I, S-II
(D) P-II, Q-I, R-IV, S-III
(E) Answer not known

124. Identify the correctly matched pair regarding Point Calimere:
(A) Ecological Significance - Only habitat of the Indian Rhinoceros in South India
(B) Geographical Location - Apex of the Cantvery River delta
(C) Wildlife feature - Congregation of migratory flamingos in winter
(D) Forest type - Dense tropical rainforests
(E) Answer not known

125. Select the correct sequence of the prominent coastal landmarks/water bodies bordering Tamil Nadu from North to South:
(A) Pulicat Lake, Gulf of Mannar, Palk Strait, Kanyakumari
(B) Pulicat Lake, Palk Strait, Gulf of Mannar, Kanyakumari
(C) Palk Strait, Pulicat Lake, Gulf of Mannar, Kanyakumari
(D) Kanyakumari, Gulf of Mannar, Palk Strait, Pulicat Lake
(E) Answer not known

126. Arrange the following hill stations of the Nilgiris district in ascending order of their approximate elevation above sea level:
1. Coonoor
2. Gudalur
3. Ooty (Udhagamandalam)
(A) 2, 1, 3
(B) 1, 2, 3
(C) 3, 1, 2
(D) 2, 3, 1
(E) Answer not known

127. Read the following statements about Adam's Bridge (Rama Setu):
I. It is a chain of limestone shoals.
II. It lies between Pamban Island in Tamil Nadu and Mannar Island in Sri Lanka.
III. It separates the Gulf of Mannar from the Palk Strait.
IV. It is currently entirely above sea level and traversable by road.
Which of the above statement(s) is/are correct?
(A) I, II and III
(B) II, III and IV
(C) I and II
(D) I and IV
(E) Answer not known

128. The following question consists of two statements, an Assertion (A) and a Reason (R). Select the correct answer using the codes given below:
Assertion (A): The Nilgiris region is a vital geographical landmark recognized as a Biosphere Reserve.
Reason (R): It features a unique ecosystem where the Eastern Ghats and the Western Ghats meet, harboring endemic species like the Nilgiri Tahr.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

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(B) IREDA - Indian Rural Energy Distribution Authority
(C) BEE - Bureau of Energy Efficiency
(D) NPCIL - National Petroleum Corporation of India Limited
(E) Answer not known

85. Select the correct sequence of the process involved in producing Green Hydrogen:
(A) Renewable energy generation → Electrolysis of water → Separation of Hydrogen and Oxygen → Storage of Hydrogen
(B) Natural gas extraction → Steam methane reforming → Carbon capture → Storage of Hydrogen
(C) Coal mining → Gasification → Separation of Hydrogen → Release of Carbon dioxide
(D) Biomass burning → Heat generation → Electrolysis → Hydrogen storage
(E) Answer not known

86. Arrange the following units of the Kudankulam Nuclear Power Plant project in their chronological order of grid synchronization/ construction phase:
1. Unit 1
2. Unit 2
3. Units 3 & 4 (under construction)
4. Units 5 & 6 (first pour of concrete)

(A) 1, 2, 3, 4
(B) 2, 1, 3, 4
(C) 1, 3, 2, 4
(D) 4, 3, 2, 1
(E) Answer not known

87. Read the following statements regarding the environmental concerns associated with large hydropower projects:
I. Submergence of large areas of forest and agricultural land.
II. Displacement of local communities and indigenous populations.
III. Emission of high levels of sulfur dioxide during operation.
IV. Alteration of aquatic ecosystems and disruption of fish migration.

Which of the above statement(s) is/are correct?
(A) I, II and IV
(B) II, III and IV
(C) I and III
(D) I, II and III
(E) Answer not known

88. The following question consists of two statements, an Assertion (A) and a Reason (R). Select the correct answer using the codes given below:
Assertion (A): The Gulf of Khambhat and the Gulf of Kutch in Gujarat have the highest potential for tidal energy in India.
Reason (R): These regions experience a very high tidal range (the difference between high and low tide) due to their coastal morphology.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

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89. Match List I with List II and select the correct answer using the codes given below:
List I: (Bioenergy Concepts)
P. Biomass
Q. Biogas
R. Bioethanol
S. Biodiesel

List II: (Descriptions)
I. Methane-rich gas produced by anaerobic digestion
II. Organic matter used as fuel
III. Fuel produced from vegetable oils or animal fats
IV. Alcohol produced by fermentation of sugars from crops

(A) P-II, Q-I, R-IV, S-III
(B) P-I, Q-II, R-III, S-IV
(C) P-II, Q-IV, R-I, S-III
(D) P-III, Q-I, R-IV, S-II
(E) Answer not known

90. Identify the incorrectly matched pair regarding the "colors" of Hydrogen:
(A) Green Hydrogen - Produced via electrolysis powered by renewable energy
(B) Grey Hydrogen - Produced from natural gas without carbon capture
(C) Blue Hydrogen - Produced from natural gas with carbon capture and storage
(D) Brown Hydrogen - Produced exclusively

107. Read the following statements regarding the Geographical Centre of India (Nagpur):
I. The "Zero Mile Stone" in Nagpur was erected by the British to use as a point to measure all distances.
II. It marks the exact geographical center of the undivided Indian subcontinent.
III. Nagpur is located in the Vidarbha region of Maharashtra.
IV. It is the southernmost point of the Deccan Plateau.
Which of the above statement(s) is/are correct?
(A) I, II and III
(B) II, III and IV
(C) I and III
(D) I and II
(E) Answer not known

108. The following question consists of two statements, an Assertion (A) and a Reason (R). Select the correct answer using the codes given below:
Assertion (A): Indira Point, the southernmost tip of the Indian territory, is not visible all year round.
Reason (R): It was largely submerged under the sea during the 2004 Indian Ocean Tsunami.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

109. Match List I with List II and select the correct answer using the codes given below:
List I: (Geographical Landmarks)
P. Indira Col
Q. Kibithu
R. Guhar Moti
S. Kanyakumari
List II: (Significance)
I. Easternmost point of India
II. Westernmost point of India
III. Southernmost tip of the Indian mainland
IV. Northernmost point of India
(A) P-IV, Q-I, R-II, S-III
(B) P-I, Q-IV, R-II, S-III
(C) P-IV, Q-II, R-I, S-III
(D) P-II, Q-III, R-IV, S-I
(E) Answer not known

110. Identify the incorrectly matched pair regarding Battery Energy Storage technologies:
(A) Lithium-ion - High energy density, commonly used in EVs and grid storage
(B) Pumped Hydro - Mechanical energy storage using water reservoirs
(C) Solid-state battery - Uses a solid electrolyte instead of liquid
(D) Lead-acid - Newest technology with the highest efficiency for grid-scale storage
(E) Answer not known

111. Read the following statements about the advantages of Smart Grids:
I. They facilitate the integration of renewable energy sources into the grid.
II. They allow for self-healing, reducing the duration of power outages.
III. They empower consumers to manage their electricity usage and costs.
IV. They increase transmission and distribution losses.
V. They enable real-time pricing models based on supply and demand.
Which of the above statement(s) is/are correct?
(A) I, II, III and V
(B) I, III, IV and V
(C) II, III, IV and V
(D) I, II and IV
(E) Answer not known

112. The "Zero Mile Stone", which consists of a pillar and four stucco horses, is located in which Indian city?
(A) New Delhi
(B) Bhopal
(C) Nagpur
(D) Hyderabad
(E) Answer not known

113. Which of the following statements correctly highlights the importance of Energy Storage Systems in a modern power grid?
(A) They store excess energy during low demand and release it during peak demand.
(B) They generate base-load electricity using fossil fuels.
(C) They are exclusively used for rural electrification.

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(E) Answer not known

100. Tamil Nadu has announced plans to develop a "Green Hydrogen Hub." Which coastal district is primarily targeted for setting up these large-scale green hydrogen and ammonia production facilities?
(A) Kanyakumari
(B) Chennai
(C) Thoothukudi
(D) Thanjavur
(E) Answer not known

101. Read the following statements regarding the Energy Conservation Act, 2001:
I. It led to the establishment of the Bureau of Energy Efficiency (BEE).
II. It provides for penalizing organizations that fail to meet energy consumption norms.
III. It applies only to the agricultural sector.
Which of the above statement(s) is/are correct?
(A) I and II
(B) II and III
(C) I only
(D) III only
(E) Answer not known

102. The following question consists of two statements, an Assertion (A) and a Reason (R). Select the correct answer using the codes given below:
Assertion (A): The Star Rating Program by the Bureau of Energy Efficiency (BEE) helps consumers make informed choices when purchasing appliances.
Reason (R): A higher number of stars on the BEE label indicates lower energy efficiency and higher power consumption.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

103. Match List I with List II and select the correct answer using the codes given below:
List I: (Elements of a Smart Grid)
P. Smart Meters
Q. Distributed Energy Resources
R. Advanced Metering Infrastructure (AMI)
S. Energy Storage Systems
List II: (Functions)
I. Two-way communication network between utility and customer
II. Real-time tracking of electricity usage at the consumer end
III. Balancing supply and demand by storing excess power
IV. Localized power generation like rooftop solar
(A) P-II, Q-IV, R-I, S-III
(B) P-I, Q-III, R-II, S-IV
(C) P-II, Q-I, R-IV, S-III
(D) P-IV, Q-II, R-I, S-III
(E) Answer not known

104. Identify the correctly matched pair of a State and its relation to the Tropic of Cancer:
(A) Gujarat - Tropic of Cancer passes through it
(B) Maharashtra - Tropic of Cancer passes through it
(C) Odisha - Tropic of Cancer passes through it
(D) Bihar - Tropic of Cancer passes through it
(E) Answer not known

105. Select the correct sequence of states through which the Tropic of Cancer passes, arranged from West to East:
(A) Gujarat, Rajasthan, Madhya Pradesh, Chhattisgarh, Jharkhand
(B) Rajasthan, Gujarat, Madhya Pradesh, Jharkhand, Chhattisgarh
(C) Gujarat, Madhya Pradesh, Rajasthan, Chhattisgarh, Jharkhand
(D) Madhya Pradesh, Gujarat, Rajasthan, Jharkhand, Chhattisgarh
(E) Answer not known

106. Arrange the following extreme geographical points of India from North to South:
1. Indira Col
2. Kanyakumari
3. Indira Point
(A) 1, 2, 3
(B) 1, 3, 2
(C) 3, 2, 1
(D) 2, 1, 3
(E) Answer not known

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sunlight into chemical energy.
(D) The emission of light by a material when an electric current is passed through it.
(E) Answer not known

78. When comparing Onshore and Offshore wind energy, which of the following is generally true?
(A) Onshore wind turbines are more expensive to install and maintain than offshore turbines.
(B) Offshore wind farms benefit from higher and more consistent wind speeds.
(C) Onshore wind farms have a higher capacity factor than offshore wind farms.
(D) Offshore wind energy is the most dominant form of renewable energy in India currently.
(E) Answer not known

79. A notable technological feature employed at the Kamuthi Solar Power Project to maintain efficiency in a dry, dusty environment is the use of:
(A) Manual labor exclusively to avoid scratching panels
(B) Robotic cleaning systems that clean the solar panels daily
(C) Continuous washing with desalinated sea water
(D) Coating the panels with thick industrial oil
(E) Answer not known

80. A major disadvantage of wind and solar energy is their "intermittency." This issue is most effectively addressed by:
(A) Shutting down the grid during periods of low power generation.
(B) Integrating smart grids and advanced energy storage technologies.
(C) Building more fossil fuel plants exclusively for daytime usage.
(D) Relocating all heavy industries next to renewable power plants.
(E) Answer not known

81. Read the following statements about India's National Green Hydrogen Mission:
I. It aims to make India a global hub for the production, use, and export of Green Hydrogen.
II. It targets the development of a green hydrogen production capacity of at least 5 MMT per annum by 2030.
III. Green hydrogen is produced using coal gasification with carbon capture.
Which of the above statement(s) is/are correct?
(A) I and II
(B) II and III
(C) I only
(D) III only
(E) Answer not known

82. The following question consists of two statements, an Assertion (A) and a Reason (R). Select the correct answer using the codes given below:
Assertion (A): The Kudankulam Nuclear Power Plant (KKNPP) provides a significant baseload power contribution to the southern grid.
Reason (R): Nuclear power provides a continuous and stable supply of electricity without greenhouse gas emissions during operation.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

83. Match List I with List II and select the correct answer using the codes given below:
List I: (Power Plants in Tamil Nadu)
P. Kudankulam
Q. Kamuthi
R. Muppandal
S. Mettur
List II: (Energy Sources)
I. Wind Energy
II. Solar Energy
III. Nuclear Energy
IV. Hydro Energy
(A) P-III, Q-II, R-I, S-IV
(B) P-III, Q-I, R-II, S-IV
(C) P-IV, Q-II, R-I, S-III
(D) P-II, Q-III, R-I, S-IV
(E) Answer not known

84. Identify the correctly matched pair regarding energy agencies in India:
(A) Tamil Nadu Energy Development Agency -

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(D) They replace the need for transmission lines entirely.
(E) Answer not known

114. The Tropic of Cancer (23°30' N) passes through eight Indian states. Which of the following states does it NOT pass through?
(A) West Bengal
(B) Tripura
(C) Manipur
(D) Mizoram
(E) Answer not known

115. Indira Point, the southernmost point of the Indian Union, was formerly known by which of the following names?
(A) Cape Comorin
(B) Pygmalion Point
(C) Point Calimere
(D) False Divi Point
(E) Answer not known

116. Grid modernization often includes the deployment of "Demand Response" programs. How does this concept apply to consumers?
(A) Consumers forced to generate their own electricity during peak hours.
(B) Consumers demanding that utility companies build more coal plants.
(C) Consumers shifting usage during peak periods for financial incentives.
(D) Consumers being disconnected from the power grid entirely by utilities.
(E) Answer not known

117. A "Smart Grid" is best defined as an electrical grid which includes a variety of operation and energy measures including:
(A) Analog meters and manual billing systems.
(B) Information and communication technology (ICT) to monitor and manage the transport of electricity.
(C) Complete reliance on non-renewable energy sources.
(D) A unidirectional flow of electricity and information.
(E) Answer not known

118. Comparing Lithium-ion and Lead-acid batteries for grid-scale energy storage, which feature predominantly favors Lithium-ion?
(A) Lower initial purchase cost
(B) Heavier weight making it more stable
(C) Higher energy density and longer cycle life
(D) Requires continuous manual maintenance
(E) Answer not known

119. Under the Energy Conservation Act, the Bureau of Energy Efficiency (BEE) has the mandate to do which of the following?
(A) Set minimum energy performance standards for equipment and appliances.
(B) Grant licenses for coal mining operations.
(C) Fix the retail price of petrol and diesel in India.
(D) Regulate the import of radioactive materials.
(E) Answer not known

120. Based on the implementation of energy efficiency measures like the UJALA scheme (LED distribution), what is the most significant macro-level inference?
(A) Resulting in a drastic increase in the peak power demand.
(B) Proving that energy-efficient appliances are inherently less reliable.
(C) Avoiding peak electricity demand and reducing total CO_2 emissions.
(D) Forcing the government to construct more thermal power plants.
(E) Answer not known

121. Read the following statements about Kanyakumari's geographical significance:
I. It is the only place in India where one can view both the sunrise and the sunset over the sea.
II. It is the confluence point of the Bay of Bengal, the Arabian Sea, and the Indian Ocean.
III. It marks the northernmost boundary of the Western Ghats.
Which of the above statement(s) is/are correct?
(A) I and II
(B) II and III
(C) I only
(D) III only
(E) Answer not known

122. The following question consists of two statements, an Assertion (A) and a Reason (R).

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from nuclear power
(E) Answer not known

91. Read the following statements about the Tamil Nadu Energy Development Agency (TEDA):
I. It was established to promote the use of new and renewable energy sources.
II. It acts as the nodal agency for implementing the PM KUSUM scheme in Tamil Nadu.
III. It regulates the electricity tariff for domestic consumers in the state.
IV. It facilitates the setting up of solar parks and wind energy projects.
V. It is responsible for the mining of coal in Tamil Nadu.
Which of the above statement(s) is/are correct?
(A) I, II and IV
(B) II, III, IV and V
(C) I, III and V
(D) I, II, III and IV
(E) Answer not known

92. The Kudankulam Nuclear Power Plant in Tamil Nadu was developed with technical cooperation and assistance from which country?
(A) United States of America
(B) Russian Federation
(C) France
(D) Japan
(E) Answer not known

93. Which of the following is a correct statement regarding India's National Green Hydrogen Mission?
(A) It includes an intervention named SIGHT (Strategic Interventions for Green Hydrogen Transition) to provide financial incentives.
(B) It mandates all commercial vehicles to run on hydrogen by 2025.
(C) It plans to import 100% of its electrolyzer requirements from China.
(D) It restricts the participation of the private sector in hydrogen production.
(E) Answer not known

94. Which of the following is NOT typically used as a feedstock for producing biomass energy in India?
(A) Bagasse (sugarcane residue)
(B) Rice husk
(C) Municipal solid waste
(D) Uranium-235
(E) Answer not known

95. In which year was the Tamil Nadu Energy Development Agency (TEDA) established by the Government of Tamil Nadu?
(A) 1975
(B) 1985
(C) 1995
(D) 2005
(E) Answer not known

96. The process of using electricity to split water into hydrogen and oxygen is called:
(A) Pyrolysis
(B) Gasification
(C) Electrolysis
(D) Fermentation
(E) Answer not known

97. Hydropower projects can be classified based on their design. A project that uses the natural downward flow of a river without creating a large reservoir is classified as:
(A) Pumped storage hydropower
(B) Run-of-river hydropower
(C) Storage hydropower
(D) Tidal barrage
(E) Answer not known

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98. When comparing Biomass and Biogas, which of the following statements is true?
(A) Biogas is entirely composed of carbon dioxide.
(B) Biomass is usually burned directly for heat, whereas Biogas is a combustible gas produced through anaerobic digestion.
(C) Biomass is a non-renewable resource, whereas Biogas is renewable.
(D) Neither Biomass nor Biogas can be used to generate electricity.
(E) Answer not known

99. Which of the following areas along the Tamil Nadu coast has been identified by researchers as having potential for tidal/wave energy, albeit lower than Gujarat's potential?
(A) Gulf of Mannar
(B) Marina Beach
(C) Ennore Creek
(D) Pulicat Lake

(E) Answer not known

129. Match List I with List II and select the correct answer using the codes given below:
List I: (Recent Events 2023-2024)
P. Global Biofuels Alliance launched
Q. COP 28 hosted
R. First Green Hydrogen Blending project started
S. TN Climate Change Mission launched
List II: (Context)
I. Dubai, UAE
II. G20 Summit, New Delhi
III. State level initiative to achieve net zero
IV. NTPC Kawas, Gujarat
(A) P-II, Q-I, R-IV, S-III
(B) P-I, Q-II, R-III, S-IV
(C) P-II, Q-IV, R-I, S-III
(D) P-III, Q-I, R-IV, S-II
(E) Answer not known

130. Identify the incorrectly matched pair regarding recent infrastructure landmarks (2023-2025):
(A) New Pamban Bridge - India's first vertical lift railway sea bridge
(B) Sudarshan Setu - Longest cable-stayed bridge in India, located in Tamil Nadu
(C) Atal Setu (MTHL) - Longest sea bridge in India
(D) Chenab Bridge - World's highest railway bridge
(E) Answer not known

131. Read the following statements about the Geographical Survey of India (GSI):
I. It was established in 1851 primarily to find coal deposits for the Railways.
II. It is the principal agency for geological mapping and mineral resource assessment in India.
III. It functions under the Ministry of Mines.
IV. It is responsible for conducting the decadal population census.
V. Its headquarters is located in Kolkata.
Which of the above statement(s) is/are correct?
(A) I, II, III and V
(B) II, III, IV and V
(C) I, II and III
(D) I, III, IV and V
(E) Answer not known

132. What is the defining engineering feature of the new Pamban railway bridge inaugurated to replace the old Scherzer rolling lift bridge?
(A) It features a state-of-the-art electromechanical vertical lift span.
(B) It is an underwater tunnel for trains.
(C) It is a floating pontoon bridge.
(D) It is exclusively a suspension bridge with no pillars in the sea.
(E) Answer not known

133. Which of the following statements correctly describes Point Calimere (Kodiakkarai)?
(A) It is an artificial seaport built by the Cholas.
(B) It is the highest peak in the Eastern Ghats.
(C) It is a Ramsar wetland site known for its salt swamps and dry evergreen forests.
(D) It is the location of India's first nuclear power plant.
(E) Answer not known

134. Which of the following is NOT a mandated function of the Geographical Survey of India (GSI)?
(A) Creation and updating of national geoscientific information
(B) Assessment of mineral resources
(C) Issuing environmental clearances for industrial projects
(D) Conducting glaciological and seismotectonic studies
(E) Answer not known

135. Where is the headquarters of the Geographical Survey of India (GSI) located?
(A) New Delhi
(B) Dehradun
(C) Kolkata
(D) Chennai
(E) Answer not known

136. Topographic mapping, essential for understanding geographical landmarks, involves the representation of which of the following?
(A) Only political boundaries and cities
(B) Both natural features (like mountains and rivers) and artificial features (like roads) using contour lines
(C) Only underground mineral deposits
(D) Atmospheric pressure systems and weather

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patterns
(E) Answer not known

137. The Nilgiri Biosphere Reserve, a major geographical landmark, encompasses territories in which of the following states?
(A) Tamil Nadu, Kerala, and Karnataka
(B) Tamil Nadu and Andhra Pradesh only
(C) Kerala and Karnataka only
(D) Tamil Nadu, Andhra Pradesh, and Telangana
(E) Answer not known

138. When comparing the old Pamban bridge with the newly constructed Pamban bridge, what is the main operational difference in allowing ships to pass?
(A) The old bridge used manual lifting, while the new one is significantly higher for ships.
(B) There is no mechanical difference; both use identical manual rolling lift spans.
(C) The old bridge used a rolling lift, while the new one uses a vertical lift.
(D) The old bridge utilized a swing span, while the new one uses a bascule span.
(E) Answer not known

139. The congregation of greater flamingos in Tamil Nadu during winter is a prominent feature of which geographical landmark?
(A) Vedanthangal Bird Sanctuary
(B) Point Calimere Wildlife and Bird Sanctuary
(C) Gulf of Mannar Marine National Park
(D) Guindy National Park
(E) Answer not known

140. Tamil Nadu established a pioneering "State Climate Change Mission." What is the main advantage of having a state-specific mission in addition to the national plan?
(A) Allowing the state to completely ignore international climate treaties.
(B) Ensuring localized mapping, targeted strategies, and grassroots implementation.
(C) Aiming to ban all industrial activities within the state boundaries.
(D) Replacing the 2070 Net Zero target with an impossible 2030 goal.
(E) Answer not known

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ANSWERS

1. (B) II and III
Methane actually has a much higher global warming potential than carbon dioxide over a century-long timeframe. Nitrous oxide is largely released into the atmosphere through agricultural soil management and fertilizer application. Water vapour acts as the most prevalent natural greenhouse gas, playing a vital role in regulating the planet's temperature via the natural greenhouse effect.

2. (A) Both A and R are true and R is the correct explanation of A.
Human activities like burning fossil fuels for energy and extensive deforestation have led to a rapid increase in atmospheric carbon dioxide concentrations. This accumulation intensifies the natural greenhouse effect, causing the planet to warm faster than natural cycles allow. These anthropogenic factors are scientifically recognized as the primary drivers of contemporary global climate change and rising temperatures.

3. (A) P-II, Q-I, R-IV, S-III
Greenhouse gases originate from various human activities across different sectors. Carbon dioxide is primarily emitted through the combustion of fossil fuels for energy. Methane is frequently associated with livestock and paddy cultivation. Nitrous oxide emissions stem largely from the use of nitrogenous fertilizers. Chlorofluorocarbons are synthetic chemicals mainly used in industrial refrigeration and air conditioning systems.

4. (C) Albedo Effect - The fraction of solar energy reflected from the Earth back into space
The albedo effect refers to the ability of surfaces to reflect solar energy back into space, measured as a fraction. Global warming specifically describes the rise in average temperatures, while climate change covers broader shifts in weather patterns. Anthropogenic refers to changes caused by human activity rather than natural processes, making accurate terminology essential for scientific climate studies.

5. (B) AR1, AR2, AR3, AR4, AR5, AR6
The Intergovernmental Panel on Climate Change publishes assessment reports sequentially to summarize global scientific knowledge on climate change. The process began with the First Assessment Report in 1990 and has continued through the Second, Third, Fourth, and Fifth reports. The Sixth Assessment Report cycle concluded recently, providing the most up-to-date analysis of climate science and mitigation strategies.

6. (B) 1, 2, 3, 4
Global Warming Potential measures how much energy a gas absorbs relative to carbon dioxide over a specific period. Carbon dioxide is the baseline with a value of one. Methane has a higher potential, followed by nitrous oxide. Chlorofluorocarbons like CFC-12 possess the highest potential among common gases, trapping thousands of times more heat than carbon dioxide molecules.

7. (A) I, II and III
The Sixth Assessment Report confirms that human activities have unequivocally caused global warming. Temperatures are projected to rise until mid-century regardless of current emissions scenarios. Limiting warming to 1.5 degrees requires immediate, deep reductions in carbon dioxide. While emissions can be lowered, certain impacts like sea-level rise are considered irreversible over very long timeframes due to ocean heat storage.

8. (A) Both A and R are true and R is the correct explanation of A.
Water vapour is a significant greenhouse gas, yet it is not directly regulated by international treaties. Its atmospheric concentration is governed by the air temperature through the process of evaporation and condensation rather than direct human emissions. As the atmosphere warms due to other gases, it holds more water vapour, creating a feedback loop that further enhances global warming.

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the updated Panchamrit targets at Glasgow. Finally, in 2022, India submitted its Long-Term Low Emission Development Strategy, outlining the path toward achieving net-zero emissions by 2070.

27. (A) I, II and III
COP 28 in Dubai resulted in several major outcomes, including the operationalization of the Loss and Damage Fund for vulnerable nations. There was a historic consensus to transition away from fossil fuels in energy systems. Additionally, countries pledged to triple global renewable energy capacity by 2030. However, India did not commit to a specific year for a complete coal phase-out.

28. (C) A is true but R is false.
The Green Climate Fund was established to support developing nations in their efforts to reduce emissions and adapt to climate impacts. It remains a central component of the financial mechanism under the UNFCCC and the Paris Agreement. The assertion is true as it describes the fund's purpose, but the reason is false because the Paris Agreement did not dissolve the fund.

29. (A) P-III, Q-II, R-IV, S-I
Various climate mechanisms have been established under different international frameworks. The Clean Development Mechanism was a key part of the Kyoto Protocol. The Green Climate Fund was formally established at COP 16 in Cancun. The Paris Agreement introduced the Global Stocktake to assess collective progress. Most recently, the operationalization of the Loss and Damage Fund was a major highlight of COP 28.

30. (C) Net Zero by 2040 - Russia
Many nations have pledged to reach net-zero emissions to combat global warming, but their target years vary. The United States and the European Union aim for 2050, while China and Russia have committed to achieving this goal by 2060. India has set its target for 2070. Misidentifying Russia's target as 2040 is incorrect according to current official international climate commitments.

31. (A) I, II, III and V
The UNFCCC is a near-universal international treaty adopted in 1992 and implemented in 1994. The Conference of the Parties serves as its supreme decision-making body. While the convention provides a framework for cooperation, it does not set individual binding emission limits; such specific targets were later addressed through the Kyoto Protocol and the voluntary nature of the Paris Agreement.

32. (C) Compensating vulnerable nations for damage that cannot be adapted to.
The Loss and Damage Fund is designed to provide financial assistance to developing countries that are particularly vulnerable to the adverse effects of climate change. This fund specifically addresses impacts that go beyond what communities can adapt to, such as extreme weather events and slow-onset disasters like sea-level rise. Its operationalization represents a significant step toward achieving global climate justice.

33. (B) 45%
In its 2022 update to the Nationally Determined Contributions, India significantly increased its climate ambitions. One of the key targets is to reduce the emissions intensity of its Gross Domestic Product by forty-five percent by 2030, compared to the levels recorded in 2005. This goal reflects India's commitment to decoupling economic growth from greenhouse gas emissions while pursuing sustainable development.

34. (B) A process to assess collective progress toward Paris Agreement goals.
The Global Stocktake is a critical mechanism under the Paris Agreement designed to evaluate the world's collective progress toward the treaty's long-term goals. Conducted every five years, it reviews efforts in mitigation, adaptation, and means of implementation. The first stocktake concluded at COP 28, providing a comprehensive assessment that informs countries as they update and enhance their future climate actions.

35. (D) Achieving 100% electric vehicle sales by 2030
India's Panchamrit strategy includes reaching 500 gigawatts of non-fossil energy capacity, meeting half of energy needs from renewables, and reducing total projected carbon emissions by

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18. (D) Hydrofluorocarbons and Perfluorocarbons
Most greenhouse gases like carbon dioxide and methane occur naturally, but certain groups are entirely synthetic. Hydrofluorocarbons and perfluorocarbons are anthropogenic gases developed for industrial uses like refrigeration, electronics manufacturing, and firefighting. These chemicals do not have natural sources and are characterized by high global warming potentials, making their regulation essential under international climate agreements like the Kigali Amendment.

19. (A) N_2O is less abundant with a global warming potential 300 times that of CO_2.
Nitrous oxide is present in the atmosphere in much smaller quantities than carbon dioxide, yet its impact on warming is far greater. It possesses a global warming potential approximately 300 times higher than carbon dioxide over a century. Furthermore, nitrous oxide remains in the atmosphere for a long time and also contributes to the depletion of the protective stratospheric ozone layer.

20. (C) Deep and rapid emission reductions across all economic sectors.
The Synthesis Report of the Sixth Assessment cycle emphasizes that human-induced climate change is already affecting every region. It warns that keeping warming within safe limits requires deep, rapid, and sustained greenhouse gas emission reductions across all sectors this decade. While adaptation is necessary, the report clarifies that mitigation must be the primary focus to prevent irreversible damage to ecosystems.

21. (A) I and II
The Paris Agreement aims to limit global temperature rise to well below 2 degrees Celsius while pursuing efforts for 1.5 degrees. It establishes a framework where countries must submit and update their climate action plans, known as Nationally Determined Contributions, every five years. While the agreement relies on international pressure and transparency, it does not include mandatory financial penalties for non-compliance.

22. (A) Both A and R are true and R is the correct explanation of A.
The principle of Common But Differentiated Responsibilities and Respective Capabilities acknowledges that all states share a duty to address climate change. However, it recognizes that developed nations have historically emitted more greenhouse gases and have more resources. Consequently, these nations are expected to lead in mitigation efforts and provide financial and technological support to developing countries to ensure a fair global transition.

23. (A) P-IV, Q-I, R-II, S-III
International climate negotiations take place at annual Conference of the Parties meetings. COP 21, held in Paris, resulted in the landmark Paris Agreement. COP 26 took place in Glasgow, focusing on coal phase-down. COP 27 was hosted in Sharm el-Sheikh, establishing a loss and damage fund. Most recently, COP 28 was held in Dubai, marking the first global stocktake.

24. (C) 50% of energy requirements from renewable energy - By 2030
India announced five ambitious climate goals, known as Panchamrit, at COP 26. These include reaching five hundred gigawatts of non-fossil energy capacity and meeting fifty percent of its energy requirements from renewable sources by 2030. Other targets involve reducing carbon emissions by one billion tonnes and cutting carbon intensity by forty-five percent, culminating in net-zero emissions by the year 2070.

25. (C) Rio Earth Summit, Kyoto Protocol, Paris Agreement, COP 28 Dubai
The evolution of international climate policy began with the Rio Earth Summit in 1992, which established the UNFCCC. This was followed by the Kyoto Protocol in 1997, which set the first binding targets. The Paris Agreement was adopted in 2015 as a universal climate treaty. The process continued with major meetings like COP 28 in Dubai, reflecting ongoing global efforts.

26. (A) 1, 3, 2, 4
India's formal climate action began with the National Action Plan on Climate Change in 2008. Following the Paris Agreement, India submitted its first Nationally Determined Contributions in 2015. In 2021, the Prime Minister announced

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can be high, the long-term operational and maintenance expenses are generally lower compared to fossil fuel plants. Furthermore, renewables enhance energy security by utilizing local resources, thereby reducing dependence on volatile international supply chains for oil and gas.

62. (A) Both A and R are true and R is the correct explanation of A.
Tamil Nadu has established itself as a leader in wind energy generation in India. The state's success is largely due to its unique geography, which includes a long coastline and strategic mountain passes like the Palghat gap. These features create natural wind corridors that funnel high-speed winds toward turbine clusters, providing a consistent and powerful resource for large-scale electricity production.

63. (A) P-II, Q-IV, R-I, S-III
Different renewable energy technologies utilize various natural processes. Solar photovoltaic systems use semiconductors to convert sunlight directly into electricity. Concentrated solar thermal technology uses mirrors to focus heat. Wind energy relies on turbines to convert the kinetic energy of air into power. Biomass energy involves the combustion or conversion of organic matter, such as agricultural waste, into usable energy.

64. (C) Kamuthi Solar Power Project - Ramanathapuram, Tamil Nadu
India has developed several massive solar parks to meet its renewable energy targets. The Kamuthi Solar Power Project is located in the Ramanathapuram district of Tamil Nadu. Other major projects include the Bhadla Solar Park in Rajasthan, the Pavagada Solar Park in Karnataka, and the Rewa Ultra Mega Solar project in Madhya Pradesh. Correctly identifying these locations is key to understanding infrastructure.

65. (A) Solar power, Wind power, Large Hydropower, Biomass power
In recent years, India's renewable energy landscape has shifted significantly. Solar power has experienced rapid growth and now holds the largest share of installed capacity among renewables. It is followed by wind power, which has a long-standing presence. Large hydropower remains a substantial contributor, while biomass energy follows these three. This sequence reflects the successful implementation of national energy missions.

66. (A) 1, 2, 3
The PM KUSUM scheme is designed to solarize the agricultural sector through various scales of deployment. It begins at the individual level with standalone off-grid solar pumps. The next stage involves solarizing existing grid-connected pumps. Finally, at the grid level, the scheme supports the establishment of decentralized ground-mounted solar power plants that can feed excess energy back to utilities.

67. (A) I, II and IV
The National Solar Mission was launched in 2010 as a core component of India's climate plan. Its initial target of 20 gigawatts was later increased to 100 gigawatts by 2022 to match the nation's rising ambitions. The mission promotes both rooftop and large-scale utility projects, with the development of Ultra Mega Solar Parks serving as a primary implementation strategy.

68. (C) A is true but R is false.
The PM KUSUM scheme helps with water conservation by providing farmers with reliable solar power and incentives to sell surplus electricity, encouraging more efficient irrigation. However, it does not ban groundwater extraction. Instead, it aims to reduce the use of expensive diesel pumps and promotes the sustainable use of water resources by making energy a source of income.

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69. (A) P-III, Q-I, R-II, S-IV
The PM-KUSUM scheme consists of three distinct components aimed at rural energy security. Component A focuses on setting up decentralized solar plants up to two megawatts. Component B involves installing standalone solar pumps. Component C covers the solarization of existing grid-connected agricultural pumps. Collectively, these components aim toward the de-dieselization of the farm sector and increasing the income of farmers.

70. (C) Aralvaimozhi - Chennai district
Tamil Nadu's wind energy infrastructure is concentrated in specific wind-rich regions.

one billion tonnes by 2030. It also aims to lower carbon intensity by forty-five percent and reach net-zero by 2070. While India promotes electric vehicles, a hundred percent sales target was not part of Panchamrit.

36. (A) International carbon markets and trading of emission reductions
Article 6 of the Paris Agreement provides a framework for countries to cooperate voluntarily in the implementation of their climate targets. Its primary focus is the establishment of international carbon markets, which allow for the trading of emission reductions between nations. By facilitating such cooperation, Article 6 aims to increase global ambition and lower the overall cost of achieving climate goals.

37. (A) National climate action plans for emissions reduction and adaptation.
Nationally Determined Contributions represent the individual climate action plans submitted by each country under the Paris Agreement. These documents outline the specific targets and measures a nation intends to take to reduce its greenhouse gas emissions and adapt to climate change impacts. NDCs are voluntary but essential for tracking global progress toward limiting temperature rise and ensuring international accountability.

38. (B) "Transitioning away" from fossil fuels in energy systems
At COP 26 in Glasgow, the final agreement included language specifically regarding the "phase down" of unabated coal power. However, COP 28 in Dubai marked a historic shift by adopting broader language that calls for "transitioning away" from fossil fuels in energy systems. This consensus aims to achieve net-zero by 2050 and represents the first time all fossil fuels were mentioned.

39. (A) Focus on rational utilization of national resources with due regard to energy security
India's Long-Term Low Emission Development Strategy emphasizes the rational utilization of national resources while prioritizing energy security. The strategy outlines a transition toward a low-carbon economy through various pathways, including the expansion of renewable and nuclear energy, increased energy efficiency, and the development of green hydrogen. It balances the need for rapid economic growth with long-term climate sustainability and net-zero.

40. (B) Regressive impacts on low-income populations via higher energy costs.
A carbon tax is a policy tool that places a price on greenhouse gas emissions to encourage a shift toward cleaner energy. While effective at signaling emission reductions, it can have regressive effects, particularly in developing nations. Higher energy costs may disproportionately impact low-income households, who spend a larger share of their income on fuel and electricity, necessitating careful social safeguards.

41. (A) I and III
The melting of Himalayan glaciers poses significant risks, including the formation of unstable lakes that can lead to devastating glacial lake outburst floods. Additionally, glacial retreat alters local microclimates and threatens regional biodiversity. While initial melting might increase river flow temporarily, it will eventually lead to a severe reduction in the dry-season flow of perennial rivers like the Ganges.

42. (A) Both A and R are true and R is the correct explanation of A.
Coastal districts in Tamil Nadu face a serious threat from seawater intrusion into freshwater sources. Rising sea levels increase the pressure of saltwater, while the over-extraction of groundwater by local communities lowers the water table. This combination reverses the natural hydraulic gradient, allowing seawater to seep inland, which contaminates aquifers and compromises the availability of clean water for agriculture and consumption.

43. (A) P-II, Q-III, R-I, S-IV
Different regions of Tamil Nadu experience varied climate vulnerabilities. Kanyakumari is particularly prone to severe coastal erosion. The Pichavaram mangroves in Cuddalore face significant threats from rising sea levels. Heatwave intensity is increasingly felt in inland districts like Vellore. Coastal districts like Nagapattinam are vulnerable to land subsidence and inundation, highlighting the need for localized adaptation strategies across the state.

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44. (C) Carbon Sequestration - The process of capturing and storing atmospheric carbon dioxide
Carbon sequestration is the natural or artificial process by which carbon dioxide is removed from the atmosphere and held in solid or liquid form. This process is vital for mitigating global warming. Conversely, a carbon footprint measures emissions, a carbon sink absorbs more than it emits, and a carbon credit is a tradable permit rather than just a fuel tax.

45. (B) Extreme Weather Event, Crop Failure, Loss of Livelihood, Climate Migration
Climate migration often follows a logical sequence of events triggered by environmental changes. An extreme weather event, such as a severe drought or flood, can lead to widespread crop failure. This agricultural loss results in a total loss of livelihood for farming communities. Consequently, people are forced to migrate to other regions or urban centers in search of survival.

46. (A) 1, 3, 2, 4
The length of a state's coastline is a primary factor in its vulnerability to sea-level rise and coastal disasters. Gujarat has the longest coastline in India, followed by Andhra Pradesh and Tamil Nadu. Maharashtra follows these states. Understanding this hierarchy helps national and state planners prioritize resources for coastal protection, disaster management, and the implementation of resilient infrastructure projects.

47. (A) I, III and IV
Climate change significantly impacts Indian agriculture through irregular rainfall and shifted monsoon seasons, which disrupt Kharif crop sowing. While higher CO_2 levels can briefly enhance photosynthesis, this benefit is often cancelled out by heat stress. Additionally, warmer conditions facilitate the spread of agricultural pests and diseases. Furthermore, increased night-time temperatures generally reduce wheat yields rather than enhancing them during the season.

48. (A) Both A and R are true and R is the correct explanation of A.
Farming in the Cauvery delta of Tamil Nadu is becoming increasingly risky due to climate-induced challenges. Unpredictable rainfall patterns and more frequent, intense cyclonic disturbances often lead to severe flooding. These events frequently occur during the critical harvest period, causing widespread inundation of paddy fields and significant crop losses, which threaten the economic stability of farmers and regional food security.

49. (A) P-IV, Q-III, R-II, S-I
Climate adaptation involves implementing specific strategies across different sectors to reduce vulnerability. In agriculture, crop diversification helps manage climate risks. Coastal protection often involves physical structures like seawalls. Water resources are managed through techniques like rainwater harvesting to ensure sustainability. Finally, early warning systems are essential for disaster management to protect lives and property from extreme weather events.

50. (C) Green Climate Fund - Primary financial mechanism established directly under the Kyoto Protocol
The Kyoto Protocol introduced three flexible market-based mechanisms: the Clean Development Mechanism, Joint Implementation, and Emissions Trading. These were designed to help developed nations meet their targets cost-effectively. However, the Green Climate Fund was established much later under the UNFCCC framework during COP 16 in Cancun, rather than being a mechanism created directly by the original Kyoto Protocol.

51. (A) I, II, III and IV
Carbon neutrality typically focuses on balancing carbon dioxide emissions, often through offsetting. Net Zero is a more comprehensive goal that includes all greenhouse gases and prioritizes deep decarbonization across the entire value chain before any remaining emissions are offset. While both terms aim for climate balance, Net Zero implies more rigorous structural changes in operations and has distinct technical definitions.

52. (C) They are not legally recognized as refugees under the 1951 Convention.
Despite the increasing number of people displaced by environmental disasters and sea-level rise, "climate refugees" currently lack formal legal recognition under international law. The

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1951 Refugee Convention defines refugees based on fear of persecution rather than environmental factors. Consequently, individuals forced to move due to climate change do not have the same legal protections or asylum rights as political refugees.

53. (B) It is a tradable permit representing the right to emit one tonne of carbon dioxide or its equivalent.
A carbon credit is a tradable permit or certificate that provides the holder with the right to emit one tonne of carbon dioxide or an equivalent amount of a different greenhouse gas. These credits are a central component of "cap and trade" programs and allow companies or countries to offset their emissions by investing in certified emission-reduction projects elsewhere.

54. (B) Significant expansion of natural freshwater wetlands
Climate change poses several threats to the Tamil Nadu coast, including accelerated erosion, more frequent cyclonic storms, and coral bleaching in the Gulf of Mannar. However, sea-level rise is expected to cause saltwater intrusion, which would likely shrink rather than expand natural freshwater wetlands. The salinization of coastal ecosystems is a major concern for local biodiversity and water quality.

55. (B) 1997
The Kyoto Protocol was adopted in December 1997 in Kyoto, Japan. It represented a historic milestone as the first international agreement to set legally binding targets for developed countries to reduce their greenhouse gas emissions. Although it was adopted in 1997, the protocol did not enter into force until 2005, following its ratification by a sufficient number of nations.

56. (B) Setting emission limits and allowing trading of pollution allowances.
The "cap and trade" system functions by setting an overall limit, or cap, on the total amount of emissions allowed from specific industries. Regulated companies are issued allowances, and those that reduce their emissions below their limit can sell their surplus to others. This market-based approach provides a financial incentive for firms to invest in cleaner technologies and efficiency.

57. (B) Developing drought-resistant crop varieties
Climate mitigation focuses on reducing or preventing the emission of greenhouse gases, such as through solar power or carbon capture. Climate adaptation involves taking action to manage the unavoidable impacts of climate change. Developing drought-resistant crop varieties is a classic adaptation measure, as it helps farmers maintain food production in a changing climate without directly addressing the atmospheric gas levels.

58. (B) Intensification and rapid development of tropical cyclones
Rising sea surface temperatures in the Bay of Bengal provide more energy to the atmosphere, which can lead to the rapid intensification of tropical cyclones. For Tamil Nadu, this means a higher risk of more frequent and powerful storms making landfall. Such conditions also impact marine life and can exacerbate coastal erosion, posing significant challenges for disaster preparedness and infrastructure resilience.

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59. (C) Nagapattinam
Nagapattinam is identified as one of the most vulnerable districts in Tamil Nadu due to its low-lying topography and extensive coastline. It is home to the Point Calimere Wildlife and Bird Sanctuary, a unique ecosystem of salt swamps and forests. Rising sea levels and frequent cyclonic surges threaten this biodiversity hotspot and the livelihoods of the coastal communities living there.

60. (B) Allowing corporations to continue polluting by purchasing cheap credits.
A primary criticism of carbon trading is that it may allow large corporations to continue their high-emission activities by simply purchasing inexpensive carbon credits rather than making fundamental changes to their operations. Critics argue this can create a "license to pollute" and delay the necessary transition toward deep decarbonization and the adoption of cleaner, more sustainable energy technologies worldwide.

61. (A) I and III
Renewable energy sources offer significant environmental benefits as they produce minimal greenhouse gas emissions during operation. Additionally, while initial installation costs

79. (B) Robotic cleaning systems that clean the solar panels daily
The Kamuthi Solar Power Project in Tamil Nadu is located in a hot and dusty region where dust accumulation can reduce the efficiency of solar panels. To address this challenge, the project uses robotic cleaning systems that automatically clean the panels every day. These robots help maintain maximum energy generation while minimizing water usage and labor requirements. This innovative technology ensures the solar plant operates efficiently and consistently under harsh environmental conditions.

80. (B) Integrating smart grids and advanced energy storage technologies.
The intermittency of solar and wind energy—caused by clouds or lack of wind—is a primary challenge for grid stability. This is most effectively addressed through the integration of smart grids and advanced energy storage technologies like large-scale batteries. These systems allow excess energy to be stored and released when needed, ensuring a steady and reliable power supply to consumers.

81. (A) I and II
India's National Green Hydrogen Mission aims to establish the country as a global leader in the production and export of green hydrogen. The mission targets a production capacity of at least five million metric tonnes per year by 2030. Green hydrogen is specifically produced through the electrolysis of water using renewable energy, rather than using coal gasification with carbon capture.

82. (A) Both A and R are true and R is the correct explanation of A.
The Kudankulam Nuclear Power Plant is a critical source of baseload power for the southern Indian grid. Nuclear energy is valued because it provides a continuous, stable supply of electricity that is not subject to the intermittency of solar or wind. Furthermore, nuclear plants do not emit greenhouse gases during operation, making them a significant part of decarbonization strategies.

83. (A) P-III, Q-II, R-I, S-IV
Tamil Nadu's energy mix includes various power plants utilizing different energy sources. Kudankulam is a major nuclear energy facility. Kamuthi is a significant solar power project. Muppandal is famous for its extensive wind energy farms. The Mettur Dam facility provides hydroelectric power. This diversity of sources ensures a more resilient power grid and helps the state meet its renewable energy goals.

84. (A) Tamil Nadu Energy Development Agency - TEDA
Several agencies play key roles in India's energy sector. The Tamil Nadu Energy Development Agency is the state's nodal agency for renewable energy. The Bureau of Energy Efficiency promotes energy-saving measures. IREDA stands for the Indian Renewable Energy Development Agency, and NPCIL is the Nuclear Power Corporation of India Limited. Correctly identifying these organizations is essential for understanding energy governance.

85. (A) Renewable energy generation → Electrolysis of water → Separation of Hydrogen and Oxygen → Storage of Hydrogen
The production of green hydrogen begins with the generation of electricity from renewable sources like wind or solar. This clean power is then used in an electrolyzer to split water into hydrogen and oxygen. After separation, the hydrogen is collected and stored for use as a fuel or industrial feedstock. This entire process produces no carbon emissions, making it "green."

86. (A) 1, 2, 3, 4
The Kudankulam Nuclear Power Plant is being developed in successive phases. Unit 1 and Unit 2 are currently operational and synchronized with the grid. Construction is actively progressing on Units 3 and 4. Meanwhile, the preliminary phases, including the first pour of concrete, have commenced for Units 5 and 6. This phased approach allows for continuous expansion of nuclear capacity.

87. (A) I, II and IV
Large hydropower projects can have significant environmental and social impacts. The creation of large reservoirs often leads to the submergence of forests and agricultural land, causing a loss of biodiversity. These projects frequently result in the displacement of local and indigenous communities. Additionally, dams can disrupt aquatic ecosystems and fish migration, though

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Muppandal is located in Kanyakumari, and Kayathar is in the Thoothukudi district. Aralvaimozhi is also situated in the Kanyakumari district, near the mountain passes, rather than in the urban center of Chennai. Kethanur is a notable wind farm site in the Tiruppur district, contributing to the state's capacity.

71. (A) I, II and IV
Solar Photovoltaic technology converts light directly into electricity using semiconductor materials, while Solar Thermal systems use mirrors to concentrate heat for steam generation. Thermal systems are particularly well-suited for integration with storage, allowing for power generation even after sunset. The Kamuthi project primarily utilizes Photovoltaic panels. PV systems are generally more common for decentralized applications than large-scale industrial heating.

72. (A) The funneling effect of wind through the Sengottai and Aralvaimozhi passes in the Western Ghats.
The Muppandal wind farm benefits from a unique geographical phenomenon. High-speed winds are funneled through natural gaps in the Western Ghats, such as the Aralvaimozhi and Sengottai passes. This "funneling effect" significantly increases wind speeds as the air moves toward the eastern plains. This concentrated flow provides an exceptionally reliable and powerful energy source, making it a premier site.

73. (C) 648 MW
The Kamuthi Solar Power Project in Tamil Nadu was a landmark achievement in India's renewable energy journey. At the time of its completion in 2016, it was one of the largest single-location solar power plants in the world. It has a total installed generation capacity of 648 megawatts and consists of millions of solar panels spread across a vast area.

74. (B) The coasts of Tamil Nadu and Gujarat have been identified as having the highest potential for offshore wind energy.
India has significant potential for offshore wind energy, with the coasts of Tamil Nadu and Gujarat identified as the most promising regions. Offshore wind offers higher and more consistent wind speeds compared to onshore sites. While the technology is more complex and expensive to install, it provides a substantial opportunity to expand India's clean energy capacity and meet long-term goals.

75. (B) Centralizing rural power to mega-dams
The PM KUSUM scheme focuses on decentralizing energy generation by empowering farmers to produce solar power locally. Its objectives include providing reliable daytime power for irrigation, reducing reliance on diesel, and creating a new source of income for farmers. It does not aim to centralize power into mega-dams, which are part of a different, more centralized energy infrastructure.

76. (B) Transmission and distribution (T&D) losses
Decentralized solar energy, such as rooftop installations, generates power close to where it is consumed. This proximity significantly reduces transmission and distribution losses that typically occur when electricity travels long distances through the grid. By minimizing these losses, decentralized systems improve overall energy efficiency, reduce the need for large-scale grid infrastructure, and provide greater resilience for local consumers.

77. (A) The generation of voltage and electric current in a material upon exposure to light.
The photovoltaic effect is the physical and chemical phenomenon where light striking certain materials, such as semiconductors, generates a voltage and an electric current. This process is the fundamental principle behind solar cells. When sunlight hits the cell, it excites electrons, allowing them to flow and create electricity, providing a direct way to harvest solar energy for various applications.

78. (B) Offshore wind farms benefit from higher and more consistent wind speeds.
Comparing wind energy types, offshore wind farms generally benefit from higher and more consistent wind speeds than onshore sites, where terrain and buildings can cause turbulence. While offshore turbines are more expensive to build and maintain due to the harsh marine environment, they can generate significantly more electricity per turbine, making them a key component of future energy strategies.

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9. (A) P-III, Q-I, R-II, S-IV
The Intergovernmental Panel on Climate Change has released major assessment reports periodically since its inception. The First Assessment Report was published in 1990, providing the initial scientific foundation. The Third report followed in 2001, the Fifth in 2014, and the comprehensive Sixth Assessment Report was released between 2021 and 2023. These documents track the evolution of global climate science.

10. (A) IPCC - Intergovernmental Panel on Climate Control
The IPCC stands for the Intergovernmental Panel on Climate Change, not control. It is an international body established to provide objective scientific information regarding human-induced climate change. Other key organizations include the United Nations Environment Programme, the World Meteorological Organization, and the United Nations Framework Convention on Climate Change, all of which collaborate on global environmental and climate governance.

11. (B) I, II, III and IV
Global warming occurs when solar radiation passes through the atmosphere and is absorbed by the Earth's surface. This energy is then re-emitted as infrared radiation. Greenhouse gases in the atmosphere trap this outgoing heat, preventing it from escaping into space and causing temperatures to rise. Unlike cooling processes, this mechanism involves the retention of energy within the planet's climate system.

12. (C) 1.45°C
Reports from the World Meteorological Organization indicate that the global average near-surface temperature in 2023 reached approximately 1.45 degrees Celsius above pre-industrial levels. This record-breaking year highlights the ongoing trend of rapid global warming. The data underscores the urgency of climate action, as temperatures approach the 1.5-degree limit set by international agreements to prevent the most severe impacts.

13. (A) Established by the WMO and UNEP in 1988.
The Intergovernmental Panel on Climate Change was created in 1988 through the joint efforts of the World Meteorological Organization and the United Nations Environment Programme. Its purpose is to provide governments with a clear, scientific view of the current state of knowledge in climate change and its potential environmental and socio-economic impacts, facilitating informed policy decisions at global levels.

14. (C) Industrial fluorinated emissions
Climate change can result from natural factors such as volcanic eruptions, ocean current shifts, and variations in solar output. However, industrial fluorinated emissions are strictly anthropogenic, meaning they are produced by human activities. These synthetic gases, used in various industrial applications, are potent greenhouse gases that do not occur naturally in the atmosphere, contributing significantly to human-induced global warming trends.

15. (B) 12 years
Methane is a potent greenhouse gas with a relatively short atmospheric lifetime of approximately twelve years. Despite its shorter duration compared to carbon dioxide, methane is much more effective at trapping heat in the atmosphere. Reducing methane emissions offers a significant opportunity for near-term climate mitigation, as its removal from the atmosphere happens much faster than many other long-lived gases.

16. (C) Positive feedback loop
The melting of Arctic ice reduces the Earth's albedo, as dark ocean water absorbs more solar heat than reflective white ice. This increased absorption leads to higher temperatures, which in turn causes more ice to melt. Such a self-reinforcing process is known as a positive feedback loop, which accelerates the overall rate of global warming and climate change impacts.

17. (B) Radiative forcing
Radiative forcing is the scientific measurement used to quantify the difference between the incoming solar energy absorbed by the Earth and the outgoing infrared energy radiated back into space. A positive value indicates that the planet is gaining heat, leading to warming. This concept is fundamental for understanding how various factors, including greenhouse gas concentrations, influence the Earth's energy balance.

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they do not typically emit sulfur dioxide during operation.

88. (A) Both A and R are true and R is the correct explanation of A.
The Gulf of Khambhat and the Gulf of Kutch in Gujarat are recognized for having India's highest tidal energy potential. This is because their unique coastal morphology leads to a very high tidal range, which is the vertical difference between high and low tides. This large volume of moving water can be harnessed by turbines to generate significant amounts of electricity.

89. (A) P-II, Q-I, R-IV, S-III
Bioenergy involves converting organic matter into various fuels. Biomass is the raw organic material used for fuel. Biogas is a methane-rich gas produced through anaerobic digestion. Bioethanol is an alcohol made by fermenting sugars from crops like sugarcane. Biodiesel is a fuel derived from vegetable oils or animal fats. These diverse bio-resources contribute to reducing fossil fuel dependence in energy.

90. (D) Brown Hydrogen - Produced exclusively from nuclear power
Hydrogen is categorized by color based on its production method. Green hydrogen uses renewables, while grey hydrogen comes from natural gas without carbon capture. Blue hydrogen includes carbon capture. However, brown hydrogen is produced from the gasification of coal, not nuclear power. Hydrogen produced specifically from nuclear energy is often referred to as "pink" or "purple" hydrogen in the industry.

91. (A) I, II and IV
The Tamil Nadu Energy Development Agency was established to promote renewable energy sources throughout the state. It acts as the primary nodal agency for implementing national schemes like PM KUSUM and facilitates the development of solar and wind parks. TEDA focuses on clean energy and does not regulate electricity tariffs or engage in coal mining, which are handled by other state entities.

92. (B) Russian Federation
The Kudankulam Nuclear Power Plant, located in Tamil Nadu, is a significant project developed through close technical cooperation between India and the Russian Federation. This partnership involves the supply of reactor technology, nuclear fuel, and technical expertise by Russian state agencies. It remains one of the most prominent examples of international strategic cooperation in the field of civil nuclear energy.

93. (A) It includes an intervention named SIGHT (Strategic Interventions for Green Hydrogen Transition) to provide financial incentives.
A key component of India's National Green Hydrogen Mission is the SIGHT program, which provides financial incentives for the domestic manufacturing of electrolyzers and the production of green hydrogen. This initiative aims to make the technology more cost-competitive and encourages private sector participation. The mission focuses on creating a self-reliant ecosystem rather than mandating immediate vehicle changes or relying entirely on imports.

94. (D) Uranium-235
Biomass energy is derived from organic materials such as agricultural residues like rice husk and bagasse, as well as municipal solid waste. These sources are processed to produce heat or electricity. In contrast, Uranium-235 is a radioactive isotope used as fuel in nuclear reactors. It is a mineral resource and does not fall under the category of organic biomass feedstock.

95. (B) 1985
The Tamil Nadu Energy Development Agency was established by the Government of Tamil Nadu in 1985. It was created with the vision to promote the use of new and renewable energy sources in the state. Since its inception, TEDA has played a pioneering role in making Tamil Nadu a leader in wind and solar energy through various policy and implementation initiatives.

96. (C) Electrolysis
Electrolysis is the specific chemical process that uses an electric current to drive a non-spontaneous reaction, such as splitting water molecules into their constituent parts: hydrogen and oxygen gases. When the electricity used for this process comes from renewable sources, the resulting hydrogen is considered a clean, carbon-free fuel. This technology is fundamental to the global transition toward a hydrogen economy.

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essential for accurate geographical and climatic analysis of India.

115. (B) Pygmalion Point
Indira Point, located on Great Nicobar Island, was formerly known as Pygmalion Point. It was renamed in honor of Prime Minister Indira Gandhi following her visit to the region. This point is significant as the southernmost extremity of Indian territory. It should not be confused with Cape Comorin, which is the southernmost point of the Indian mainland at Kanyakumari.

116. (C) Consumers shifting usage during peak periods for financial incentives.
Demand response is a grid management strategy that encourages consumers to reduce or shift their electricity usage during periods of peak demand. In exchange, utilities often provide financial incentives or lower rates. This approach helps balance the grid, reduces the need for additional power generation capacity, and lowers overall energy costs for both the utility companies and participating consumers.

117. (B) Information and communication technology (ICT) to monitor and manage the transport of electricity.
A smart grid is an modernized electrical network that utilizes information and communication technology to gather and act on information about the behavior of suppliers and consumers. This two-way flow of electricity and data allows for more efficient monitoring, management, and transport of power. It facilitates the integration of various energy sources, improves reliability, and enables more sustainable and resilient operations.

118. (C) Higher energy density and longer cycle life
When comparing battery technologies for grid storage, lithium-ion batteries are often preferred over lead-acid types because they possess a much higher energy density and a significantly longer cycle life. This means they can store more energy in a smaller space and withstand more charge-discharge cycles before needing replacement. These features make them more cost-effective and reliable for long-term applications.

119. (A) Set minimum energy performance standards for equipment and appliances.
The Bureau of Energy Efficiency, established under the Energy Conservation Act, has the primary mandate to reduce the energy intensity of the Indian economy. Its key functions include setting minimum energy performance standards for various appliances and equipment, as well as developing star labeling programs. BEE also works on energy building codes and coordinates efficiency programs with various state and central agencies.

120. (C) Avoiding peak electricity demand and reducing total CO_2 emissions.
Large-scale energy efficiency programs like the UJALA scheme, which distributed millions of LED bulbs, have a significant macro-level impact. By reducing the electricity required for lighting, these initiatives help avoid substantial amounts of peak power demand. This reduction lowers the need for new power plants and directly decreases total carbon dioxide emissions, demonstrating that efficiency is a highly effective climate tool.

121. (A) I and II
Kanyakumari holds unique geographical importance as the tip of the Indian peninsula where the Arabian Sea, the Bay of Bengal, and the Indian Ocean converge. Due to its specific coastal orientation, it is the only place in India where people can witness both the sunrise and sunset over the ocean. It marks the southern end of the Western Ghats mountain range.

122. (A) Both A and R are true and R is the correct explanation of A.
The original Pamban Bridge, completed in 1914, was a significant engineering feat for its time. As India's first sea bridge, it connected the mainland to Rameswaram island. A key feature was the Scherzer rolling lift span, a bascule section that could be manually raised to allow large ships and vessels to pass through the channel, facilitating both rail and maritime transport.

123. (A) P-III, Q-I, R-IV, S-II
Tamil Nadu features several distinct geographical landmarks located in different districts. Point Calimere is situated in Nagapattinam. The historic Pamban Bridge is in Ramanathapuram. Mukurthi National Park, known for its montane

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extent and climatic zoning within the Indian subcontinent.

106. (A) 1, 2, 3
India's territory extends between extreme geographical points across several latitudes. In the far north lies the Indira Col. Moving southward along the mainland, Kanyakumari marks the tip of the peninsula. Further south, within the Andaman and Nicobar Islands, Indira Point represents the absolute southernmost point of the entire Indian Union, although it is geographically separated from the mainland.

107. (A) I, II and III
Nagpur is historically recognized as the geographical center of undivided India, marked by the "Zero Mile Stone" erected during British rule. This landmark served as a reference point for measuring distances throughout the subcontinent. Located in the Vidarbha region of Maharashtra, Nagpur is centrally positioned, although it is not the southernmost point of the Deccan Plateau, which extends much further.

108. (A) Both A and R are true and R is the correct explanation of A.
Indira Point is the southernmost tip of the Indian Union, located on Great Nicobar Island. It is often not visible because a significant portion was submerged beneath the sea following the massive Indian Ocean Tsunami in 2004. The event caused local land subsidence, leading to the permanent inundation of the area surrounding the lighthouse, making the assertion and reason both true.

109. (A) P-IV, Q-I, R-II, S-III
India's extreme geographical points define its vast boundaries. The Indira Col is the northernmost point of the country. Kibithu in Arunachal Pradesh is the easternmost point, while Guhar Moti in Gujarat marks the westernmost extent. Kanyakumari is the southernmost tip of the Indian mainland. These landmarks are crucial for understanding the nation's spatial dimensions and its diverse geographical features.

110. (D) Lead-acid - Newest technology with the highest efficiency for grid-scale storage
Various energy storage technologies are used for different applications. Lithium-ion batteries offer high energy density and are widely used in electric vehicles. Solid-state batteries represent an emerging technology with solid electrolytes. However, lead-acid batteries are an older, well-established technology; they are generally less efficient and have a shorter cycle life than modern alternatives like lithium-ion for large grid-scale storage.

111. (A) I, II, III and V
Smart grids offer numerous benefits, including the seamless integration of renewable energy and the ability to self-heal after faults, which improves reliability. They empower consumers by providing detailed usage data and enable dynamic pricing based on real-time demand. Importantly, a primary goal of smart grid technology is to decrease, rather than increase, transmission and distribution losses through more efficient management.

112. (C) Nagpur
The "Zero Mile Stone" is a historic landmark located in the city of Nagpur, Maharashtra. It was established by the British during the Great Trigonometrical Survey of India. The monument consists of a sandstone pillar and four stucco horses, symbolizing its role as the center from which all distances in the Indian subcontinent were measured during the colonial era.

113. (A) They store excess energy during low demand and release it during peak demand.
Energy storage systems are vital for balancing power grids, particularly as they integrate more intermittent renewable sources like wind and solar. These systems store excess electricity when demand is low or production is high and release it during periods of peak demand. This capability helps maintain a steady supply, improves grid stability, and reduces the need for expensive peaking power plants.

114. (C) Manipur
The Tropic of Cancer passes through eight Indian states: Gujarat, Rajasthan, Madhya Pradesh, Chhattisgarh, Jharkhand, West Bengal, Tripura, and Mizoram. While it crosses the northeastern states of Tripura and Mizoram, it does not pass through Manipur, which lies further to the north. Knowing the exact path of this latitude is

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97. (B) Run-of-river hydropower
Run-of-river hydropower systems generate electricity by utilizing the natural flow and elevation of a river without the need for large dams or extensive reservoirs. This design is often considered more environmentally friendly than traditional storage-based projects because it minimizes the submergence of land and reduces disruption to the river's natural seasonal flow and surrounding ecosystems while providing a consistent power source.

98. (B) Biomass is usually burned directly for heat, whereas Biogas is a combustible gas produced through anaerobic digestion.
Biomass and biogas are both renewable energy sources but differ in their form and application. Biomass refers to solid organic matter, like wood or crop waste, which is often burned directly to produce heat. Biogas is a gaseous fuel, primarily methane, produced through the anaerobic digestion of organic materials. Both can be used to generate electricity and offer sustainable alternatives.

99. (A) Gulf of Mannar
While the highest tidal energy potential in India is found in Gujarat, researchers have identified certain areas along the Tamil Nadu coast, particularly the Gulf of Mannar, as having potential for tidal and wave energy. Although the tidal range is lower than in the western gulfs, advancements in technology could eventually make harvesting energy from these waters viable for local power needs.

100. (C) Thoothukudi
The Government of Tamil Nadu has identified the coastal district of Thoothukudi as a primary hub for green hydrogen and green ammonia production. This location is advantageous due to its existing industrial infrastructure, proximity to ports for export, and the availability of renewable energy resources. Developing this hub is a key part of the state's strategy to become a global leader.

101. (A) I and II
The Energy Conservation Act of 2001 is a landmark legislation in India that led to the creation of the Bureau of Energy Efficiency. It provides a legal framework for promoting energy efficiency across various sectors, including industry and buildings. The act empowers the government to set consumption standards and penalize non-compliance, aiming to reduce energy intensity throughout the national economy.

102. (C) A is true but R is false.
The Bureau of Energy Efficiency's Star Rating Program is an important tool for consumers, providing clear information on the energy performance of household appliances. The assertion is true as it helps with informed purchasing decisions. However, the reason is false; a higher number of stars actually indicates greater energy efficiency and lower power consumption, which helps consumers save on electricity bills.

103. (A) P-II, Q-IV, R-I, S-III
Smart grids consist of several technologically advanced components. Smart meters track real-time usage at the consumer end. Distributed energy resources, such as rooftop solar, provide localized power. Advanced metering infrastructure creates a two-way communication network between the utility and the user. Energy storage systems are essential for balancing the grid by storing excess power for use during periods of high demand.

104. (A) Gujarat - Tropic of Cancer passes through it
The Tropic of Cancer is an imaginary line of latitude located at approximately 23.5 degrees North of the equator. In India, it passes through eight states, including Gujarat, Rajasthan, and Madhya Pradesh. It does not pass through states like Maharashtra, Odisha, or Bihar. Understanding the path of the Tropic of Cancer is fundamental for studying India's geography and regional climate.

105. (A) Gujarat, Rajasthan, Madhya Pradesh, Chhattisgarh, Jharkhand
The Tropic of Cancer traverses India from west to east through a specific sequence of states. Starting from the western coast, it enters Gujarat, then passes through Rajasthan, Madhya Pradesh, Chhattisgarh, and Jharkhand. Continuing eastward, it crosses West Bengal, Tripura, and finally Mizoram. This geographical fact is essential for understanding the latitudinal

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grasslands and the Nilgiri Tahr, is in the Nilgiris district. The extensive Pichavaram mangroves are located in Cuddalore. Each of these sites represents the state's diverse natural and built heritage.

124. (C) Wildlife feature - Congregation of migratory flamingos in winter
Point Calimere is a renowned wildlife and bird sanctuary located on the coast of Tamil Nadu. It is particularly famous for hosting vast congregations of migratory birds, including thousands of greater flamingos, during the winter months. The sanctuary's unique mix of salt swamps and dry evergreen forests provides a critical habitat for these birds and other wildlife like the blackbuck antelope.

125. (B) Pulicat Lake, Palk Strait, Gulf of Mannar, Kanyakumari
The coastline of Tamil Nadu is characterized by several major water bodies and landmarks. Moving from north to south, one first encounters Pulicat Lake on the border with Andhra Pradesh. Further south lies the Palk Strait, which separates India and Sri Lanka. This is followed by the Gulf of Mannar. Finally, Kanyakumari marks the southernmost tip of the Indian mainland.

126. (A) 2, 1, 3
The Nilgiris district features several hill stations at varying altitudes. Gudalur is located at a lower elevation of approximately 1,100 meters. Coonoor is situated higher, at about 1,850 meters above sea level. Ooty, also known as Udhagamandalam, is the highest of the three, sitting at an elevation of roughly 2,240 meters. This variation in altitude creates distinct microclimates and vegetation patterns.

127. (A) I, II and III
Adam's Bridge is a chain of limestone shoals and sandbanks between Pamban Island in India and Mannar Island in Sri Lanka. It serves as a natural boundary that separates the shallow Palk Strait from the Gulf of Mannar. While parts of the ridge are visible, much of it is currently submerged and not traversable by road, making it a significant feature.

128. (A) Both A and R are true and R is the correct explanation of A.
The Nilgiris region is a vital geographical landmark and is recognized as India's first Biosphere Reserve. It is ecologically significant because it is the point where the Eastern Ghats and the Western Ghats meet. This convergence creates a unique hotspot for biodiversity, supporting many endemic species like the Nilgiri Tahr and providing a critical corridor for large wildlife like elephants.

129. (A) P-II, Q-I, R-IV, S-III
Recent climate and energy initiatives have been launched at various levels. The Global Biofuels Alliance was formed during the G20 Summit in New Delhi. COP 28 was hosted in Dubai. NTPC started its first green hydrogen blending project in Gujarat. In Tamil Nadu, the state launched its own Climate Change Mission to achieve net-zero, demonstrating commitment to localized environmental action.

130. (B) Sudarshan Setu - Longest cable-stayed bridge in India, located in Tamil Nadu
India has recently completed several record-breaking infrastructure projects. The new Pamban Bridge is the country's first vertical lift rail bridge. The Atal Setu in Mumbai is now the longest sea bridge. The Chenab Bridge is the highest railway bridge globally. However, Sudarshan Setu is the longest cable-stayed bridge in India and is located in Gujarat, connecting Okha to Beyt Dwarka.

131. (A) I, II, III and V
The Geological Survey of India, established in 1851, is one of the world's oldest organizations of its kind. It was initially formed to explore coal for the railways and now serves as the principal agency for geological mapping and mineral assessment. Functioning under the Ministry of Mines with its headquarters in Kolkata, it does not conduct the national population census.

132. (A) It features a state-of-the-art electromechanical vertical lift span.
The new Pamban railway bridge, designed to replace the century-old structure, features a modern electromechanical vertical lift span. Unlike the old bridge's manual rolling lift, this new section can be raised vertically to its full

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Which of the above statements is/are correct?
(A) I and II
(B) II and III
(C) I and III
(D) I only
(E) Answer not known

23. Consider the following statements:
Assertion (A): Within the contiguous zone, a coastal state can enforce customs, taxation, immigration, and pollution laws.
Reason (R): The contiguous zone provides full sovereignty over the airspace above the water and the seabed below it.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

24. Match the ocean currents in List I with their corresponding ocean basin in List II:
List I: (Ocean Currents)
P. Gulf Stream
Q. Kuroshio Current
R. Agulhas Current
S. Benguela Current
List II: (Ocean Basin)
I. North Pacific Ocean
II. South Atlantic Ocean
III. North Atlantic Ocean
IV. Indian Ocean
(A) P-III, Q-I, R-IV, S-II
(B) P-I, Q-III, R-II, S-IV
(C) P-III, Q-II, R-IV, S-I
(D) P-IV, Q-I, R-III, S-II
(E) Answer not known

25. Which of the following statements correctly explains the formation of warm and cold ocean currents?
(A) Warm currents flow from the poles toward the equator, while cold currents flow from the equator to the polar regions.
(B) Warm currents move poleward from the equator, while cold currents flow toward the equator.
(C) Both warm and cold currents are exclusively generated and maintained by large-scale global tidal forces.
(D) Cold currents are strictly surface currents, whereas warm currents are identified as deep-water currents.
(E) Answer not known

26. Which of the following pairs of ocean current and its nature is correctly matched?
(A) Canary Current - Warm current
(B) Humboldt Current - Cold current
(C) Brazilian Current - Cold current
(D) Oyashio Current - Warm current
(E) Answer not known

27. The presence of cold ocean currents along the western coasts of continents in tropical and subtropical latitudes generally leads to:
(A) The development of arid and desert conditions.
(B) Heavy monsoonal rainfall in the coastal regions.
(C) The formation of dense tropical rainforests.
(D) Increased occurrence of severe tropical cyclones.
(E) Answer not known

28. According to UNCLOS 1982, what is the correct sequence of maritime zones moving seaward from the baseline?
(A) Contiguous Zone, Territorial Sea, Exclusive Economic Zone, High Seas
(B) Territorial Sea, Exclusive Economic Zone, Contiguous Zone, High Seas
(C) Territorial Sea, Contiguous Zone, Exclusive Economic Zone, High Seas
(D) Exclusive Economic Zone, Territorial Sea, Contiguous Zone, High Seas
(E) Answer not known

29. Which of the following statements regarding the North Indian Ocean currents is incorrect?
(A) The currents in the North Indian Ocean are heavily influenced by the seasonal reversal of monsoon winds.
(B) During winter, the North Equatorial Current flows from east to west.
(C) The Somali Current acts as a cold current during the southwest monsoon season.
(D) The current circulation in the North Indian Ocean remains identical throughout the year regardless of seasons.

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CHAPTER 13
Oceanography and Coastal Geography

1. What is the rank of the Indian Ocean in terms of size among the world's oceans?
(A) First
(B) Second
(C) Third
(D) Fourth
(E) Answer not known

2. Consider the following statements regarding the branches of oceanography:
I. Physical oceanography studies waves, tides, and currents.
II. Chemical oceanography focuses on the distribution of marine organisms.
III. Geological oceanography studies the ocean floor topography and plate tectonics.
Which of the above statements is/are correct?
(A) I and II
(B) II and III
(C) I and III
(D) I only
(E) Answer not known

3. Consider the following statements:
Assertion (A): The Indian Ocean holds immense strategic importance for India.
Reason (R): It provides crucial sea lines of communication that connect the Middle East, Africa, and East Asia, facilitating India's energy and trade security.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

4. Match the ocean floor topography in List I with their descriptions in List II:
List I: (Ocean Floor Topography)
P. Continental Shelf
Q. Continental Slope
R. Abyssal Plain
S. Ocean Ridge
List II: (Descriptions)
I. Extensive flat regions of the deep ocean floor
II. Shallow, gently sloping seaward extension of the continent
III. Continuous underwater mountain chain formed by divergent plates
IV. Steep gradient connecting the shelf to the deep ocean floor
(A) P-I, Q-III, R-II, S-IV
(B) P-IV, Q-I, R-III, S-II
(C) P-II, Q-I, R-IV, S-III
(D) P-II, Q-IV, R-I, S-III
(E) Answer not known

5. Which of the following statements correctly describes the economic significance of India's continental shelf?
(A) It is devoid of sedimentary basins and mainly used for deep-sea mining.
(B) It is a major source of petroleum, natural gas, and rich fishing grounds.
(C) It is internationally recognized as international waters with no sovereign rights.
(D) It is primarily utilized for the extraction of polymetallic nodules.
(E) Answer not known

6. Which of the following pairs of ocean characteristics is correctly matched?
(A) Pacific Ocean - "S" shaped basin
(B) Atlantic Ocean - Ring of Fire
(C) Indian Ocean - Landlocked in the north
(D) Arctic Ocean - Largest continuous abyssal plains
(E) Answer not known

7. How does the presence of the Mid-Atlantic Ridge affect the topography of the Atlantic Ocean floor?

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height in a much shorter time. This advanced engineering allows for the smooth passage of larger ships through the channel while maintaining a vital rail link to Rameswaram.

133. (C) It is a Ramsar wetland site known for its salt swamps and dry evergreen forests.
Point Calimere is a significant geographical and ecological landmark in Tamil Nadu. It is a designated Ramsar site, recognized for its international importance as a wetland. The area is characterized by a unique landscape of salt swamps, tidal mudflats, and tropical dry evergreen forests. It serves as a vital wintering ground for thousands of migratory birds and supports various local wildlife.

134. (C) Issuing environmental clearances for industrial projects
The Geological Survey of India is responsible for generating national geoscientific information, assessing mineral resources, and conducting specialized studies in glaciology and seismotectonics. However, it is not the agency responsible for issuing environmental clearances for industrial projects; that regulatory function is handled by the Ministry of Environment, Forest and Climate Change and its associated state-level pollution control boards.

135. (C) Kolkata
The headquarters of the Geological Survey of India is located in Kolkata, West Bengal. This historic city has been the center of the organization since its founding in 1851. From this central office, GSI coordinates its extensive geological mapping, mineral exploration, and geoscientific research activities across its various regional and state units throughout the country to support national development.

136. (B) Both natural features (like mountains and rivers) and artificial features (like roads) using contour lines
Topographic mapping is a detailed and accurate representation of cultural and natural features on the ground. It uses contour lines to show the shape and elevation of the land, such as mountains and valleys. These maps include natural features like rivers and forests, as well as artificial ones like roads and buildings, making them essential for geographical study and urban planning.

137. (A) Tamil Nadu, Kerala, and Karnataka
The Nilgiri Biosphere Reserve is a massive protected area that spans across the three southern Indian states of Tamil Nadu, Kerala, and Karnataka. This trans-boundary reserve encompasses several national parks and sanctuaries, protecting a vast range of ecosystems from tropical forests to montane grasslands. Its location at the junction of the Western and Eastern Ghats makes it a critical ecological landmark.

138. (C) The old bridge used a rolling lift, while the new one uses a vertical lift.
The primary operational difference between the old and new Pamban bridges lies in their lift mechanisms. The historic bridge used a Scherzer rolling lift, which opened like a pair of scissors to allow ships through. The new bridge employs a state-of-the-art vertical lift span, where the entire middle section is raised vertically. This modern approach is more efficient and provides better clearance.

139. (B) Point Calimere Wildlife and Bird Sanctuary
The Point Calimere Wildlife and Bird Sanctuary is the most prominent geographical landmark in Tamil Nadu for observing large numbers of greater flamingos. These birds migrate from the Rann of Kutch and other regions to spend the winter in the sanctuary's extensive salt pans and mudflats. This natural spectacle draws researchers and nature enthusiasts, highlighting the sanctuary's importance as a wetland.

140. (B) Ensuring localized mapping, targeted strategies, and grassroots implementation.
A state-specific mission, like the one in Tamil Nadu, provides a significant advantage by allowing for more granular, localized climate mapping. This approach enables the state to develop targeted strategies that address its unique coastal and inland vulnerabilities. Furthermore, it facilitates grassroots implementation of adaptation and mitigation projects, ensuring that climate action is more effective, inclusive, and tailored to local needs.

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lowest level of a body of water
(B) Pelagic zone - The entire water column of the open ocean
(C) Bathyal zone - The sunlight surface layer of the ocean
(D) Hadal zone - The deepest parts of the ocean, typically within trenches
(E) Answer not known

15. The ocean floor can be classified based on light penetration. Which of the following zones represents the entirely dark, deeper part of the ocean where photosynthesis cannot occur?
(A) Epipelagic zone
(B) Aphotic zone
(C) Photic zone
(D) Neritic zone
(E) Answer not known

16. Arrange the following oceans in descending order of their total area:
I. Atlantic Ocean
II. Pacific Ocean
III. Arctic Ocean
IV. Indian Ocean
(A) II, I, IV, III
(B) II, I, III, IV
(C) I, II, IV, III
(D) II, IV, I, III
(E) Answer not known

17. The average width of the continental shelf along the eastern coast of India is roughly:
(A) narrower than that of the western coast.
(B) equal to that of the western coast.
(C) wider than that of the western coast.
(D) non-existent due to subduction zones.
(E) Answer not known

18. Consider the following statements regarding the ocean floor topography of the Indian Ocean:
I. The Sunda Trench is one of the major deep-sea trenches located in the Indian Ocean.
II. The Ninety East Ridge is a significant aseismic ridge in the eastern Indian Ocean.
III. The continental shelf is wider off the coast of Maharashtra compared to Tamil Nadu.
IV. The Mid-Indian Ridge extends from the Gulf of Aden towards the south.
V. The Indian Ocean lacks any abyssal plains due to high volcanic activity.
Which of the above statements is/are correct?
(A) I, II, III and IV
(B) II, III, IV and V
(C) I, II and V
(D) III, IV and V
(E) Answer not known

19. Which prominent oceanographic feature serves as a continuous submarine mountain chain globally, with a total length exceeding 65,000 km?
(A) Mid-Ocean Ridge System
(B) Deep Ocean Trench System
(C) Continental Margin Network
(D) Abyssal Hill Complex
(E) Answer not known

20. Based on the geological characteristics of the continental shelf, what can be inferred about its potential for natural resources?
(A) Its steep gradient makes it an ideal location for harnessing deep-sea geothermal energy.
(B) It is internationally recognized as international waters with no sovereign rights.
(C) Its position over divergent boundaries makes it a primary source of polymetallic nodules.
(D) Accumulated organic sediments make it rich in hydrocarbon reserves.
(E) Answer not known

21. In which year was the United Nations Convention on the Law of the Sea (UNCLOS) adopted?
(A) 1972
(B) 1982
(C) 1994
(D) 2002
(E) Answer not known

22. Consider the following statements regarding the Exclusive Economic Zone (EEZ):
I. It extends up to 200 nautical miles from the baseline of a coastal state.
II. The coastal state has sovereign rights for exploring and exploiting natural resources within this zone.
III. Other states are prohibited from laying submarine cables and pipelines within a country's EEZ.

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(A) It creates a continuous subduction zone and deep volcanic trenches along the entire ocean basin.
(B) It prevents the formation of any abyssal plains or significant sedimentation in the region.
(C) It restricts the flow of deep surface currents and thermal exchanges across the equator.
(D) It bisects the basin into two halves with shallow central depths.
(E) Answer not known

8. Which of the following represents the correct sequence of ocean floor topography from the coastline to the deep sea?
(A) Continental Slope, Continental Shelf, Abyssal Plain, Continental Rise
(B) Continental Shelf, Continental Slope, Continental Rise, Abyssal Plain
(C) Abyssal Plain, Continental Slope, Continental Shelf, Continental Rise
(D) Continental Shelf, Continental Rise, Continental Slope, Abyssal Plain
(E) Answer not known

9. Which of the following statements regarding the Southern Ocean is incorrect?
(A) It completely surrounds the frozen continent of Antarctica.
(B) It contains the warm Antarctic Circumpolar Current.
(C) Its northern boundary is generally accepted as 60 degrees South latitude.
(D) It connects the southern portions of the Pacific, Atlantic, and Indian Oceans.
(E) Answer not known

10. Consider the following statements regarding the world's oceans:
I. The Pacific Ocean is the largest and deepest ocean on Earth.
II. The Atlantic Ocean is bounded by the Americas to the west and Europe/Africa to the east.
III. The Arctic Ocean is the shallowest and smallest of the world's major oceans.
IV. The Indian Ocean is the only ocean named after a specific country.
Which of the above statements is/are correct?
(A) I, II and III
(B) I, III and IV
(C) I and IV
(D) II and IV
(E) Answer not known

11. Consider the following statements:
Assertion (A): The abyssal plains are among the flattest regions on Earth's surface.
Reason (R): They are covered by thick layers of fine sediments that smooth out the underlying rugged volcanic topography.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

12. Match the ocean features in List I with their primary associated ocean in List II:
List I: (Ocean Features)
P. Mariana Trench
Q. Mid-Atlantic Ridge
R. Ninety East Ridge
S. Lomonosov Ridge
List II: (Associated Ocean)
I. Indian Ocean
II. Arctic Ocean
III. Pacific Ocean
IV. Atlantic Ocean
(A) P-IV, Q-III, R-II, S-I
(B) P-III, Q-I, R-IV, S-II
(C) P-III, Q-IV, R-I, S-II
(D) P-I, Q-IV, R-III, S-II
(E) Answer not known

13. Which of the following best defines the Continental Slope?
(A) The shallowest part of the ocean immediately adjacent to the landmass.
(B) A gentle incline formed by accumulated sediments at the base of the ocean trench.
(C) An extensive flat area in the deep ocean basin.
(D) The steeply descending zone linking the continental shelf to the deep ocean floor.
(E) Answer not known

14. Which of the following pairs of oceanographic terms and meanings is incorrectly matched?
(A) Benthic zone - The ecological region at the

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(E) Answer not known

30. Consider the following statements about the causes of ocean currents:
I. Prevailing winds are the primary driving force for surface ocean currents.
II. Variations in water density caused by temperature and salinity differences drive deep ocean currents.
III. The Coriolis effect causes ocean currents to deflect to the left in the Northern Hemisphere.
IV. The shape of the coastlines alters the direction of ocean currents.
Which of the above statements is/are correct?
(A) I, II and III
(B) I, II and IV
(C) I and IV
(D) II and IV
(E) Answer not known

31. Consider the following statements:
Assertion (A): The Agulhas current is a warm ocean current flowing down the eastern coast of Africa.
Reason (R): It originates in the high latitudes near Antarctica and flows northward towards the equator.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

32. Match the ocean currents of the Indian Ocean in List I with their characteristics in List II:
List I: (Ocean Currents)
P. South Equatorial Current
Q. Mozambique Current
R. West Australian Current
S. Somali Current
List II: (Characteristics)
I. Warm current flowing southwards between Madagascar and Africa
II. Cold current flowing northwards along the western coast of Australia
III. Warm current flowing westwards near the equator all year round
IV. Current that reverses its direction seasonally with the monsoons
(A) P-I, Q-III, R-IV, S-II
(B) P-III, Q-II, R-I, S-IV
(C) P-II, Q-I, R-III, S-IV
(D) P-III, Q-I, R-II, S-IV
(E) Answer not known

33. Under UNCLOS, what is the definition of the High Seas?
(A) Marine areas not included in the EEZ, territorial sea, or internal waters.
(B) The specific area of the sea extending precisely up to 24 nautical miles from the baseline.
(C) The designated marine zones restricted strictly for conducting naval military exercises.
(D) The continental shelf beyond 200 nautical miles containing strategic mineral resources.
(E) Answer not known

34. Which of the following pairs is incorrectly matched regarding ocean currents?
(A) Peru Current - Cold Current
(B) Gulf Stream - Warm Current
(C) California Current - Warm Current
(D) Labrador Current - Cold Current
(E) Answer not known

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35. Ocean currents are broadly classified into surface currents and deep-water currents. Deep-water currents are primarily driven by:
(A) Thermohaline circulation
(B) Prevailing trade winds
(C) Tidal forces exerted by the Moon
(D) Centrifugal force of the Earth's rotation
(E) Answer not known

36. Arrange the following currents in the correct sequence as they form the North Atlantic Gyre, starting from the equator and moving clockwise:
I. North Atlantic Drift
II. Gulf Stream
III. North Equatorial Current
IV. Canary Current
(A) III, II, I, IV
(B) II, I, IV, III
(C) III, I, II, IV
(D) I, IV, III, II
(E) Answer not known

volume of water.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

52. Match the tidal regions of India in List I with their respective coastlines in List II:
List I: (Tidal Regions)
P. Gulf of Khambhat
Q. Sundarbans
R. Gulf of Mannar
S. Palk Bay
List II: (Coastlines)
I. Tamil Nadu Coast (South)
II. Gujarat Coast
III. Tamil Nadu Coast (North/East)
IV. West Bengal Coast
(A) P-II, Q-III, R-I, S-IV
(B) P-IV, Q-II, R-III, S-I
(C) P-I, Q-IV, R-II, S-III
(D) P-II, Q-IV, R-I, S-III
(E) Answer not known

53. How is a "mixed tidal pattern" defined in oceanography?
(A) A tidal cycle with one high and one low tide daily.
(B) A tidal cycle with two high tides and two low tides of unequal heights daily.
(C) A tidal cycle that alternates between spring and neap tides every 12 hours.
(D) A tidal cycle caused by the combined gravitational pull of planets other than the Earth and Moon.
(E) Answer not known

54. Which of the following pairs related to wave mechanics is incorrectly matched?
(A) Swash - The forward movement of water up the beach
(B) Backwash - The backward movement of water down the beach
(C) Fetch - The depth of the ocean floor where the wave originates
(D) Wave frequency - The number of waves passing a fixed point per unit time
(E) Answer not known

55. Ocean tides are broadly classified based on their frequency into diurnal, semi-diurnal, and mixed. The tidal pattern observed in the Bay of Bengal along the eastern coast of India is predominantly:
(A) Diurnal
(B) Mixed
(C) Micro-tidal with no distinct frequency
(D) Semi-diurnal
(E) Answer not known

56. Arrange the following major steps of a tsunami early warning system in chronological order:
I. Detection of seismic activity
II. Sea level change verification
III. Warning dissemination
IV. Community response
(A) I, II, III, IV
(B) II, I, III, IV
(C) I, III, II, IV
(D) IV, III, II, I
(E) Answer not known

57. The catastrophic 2004 Indian Ocean Tsunami struck the coast of Tamil Nadu on which specific date?
(A) 26 January 2004
(B) 26 December 2004
(C) 12 December 2004
(D) 15 November 2004
(E) Answer not known

58. Consider the following statements regarding coastal disaster management in Tamil Nadu post-2004:
I. Shelter belts of Casuarina and mangroves were planted to dissipate wave energy.
II. Multi-purpose evacuation shelters were constructed along vulnerable coastal stretches.
III. The early warning system was dismantled as tsunamis are considered one-time events.
IV. Coastal mapping was utilized to identify evacuation routes.
V. Mock drills are regularly conducted in coastal districts for community preparedness.
Which of the above statements is/are correct?
(A) I, II, IV and V
(B) I, III, IV and V
(C) II, III and V
(D) I, II and V

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S. Wavelength

List II: (Definitions)

I. The lowest point of a wave

II. The horizontal distance between two successive crests

III. The highest point of a wave

IV. The vertical distance between a crest and a trough

(A) P-I, Q-III, R-II, S-IV

(B) P-III, Q-IV, R-I, S-II

(C) P-III, Q-I, R-IV, S-II

(D) P-II, Q-I, R-IV, S-III

(E) Answer not known

45. Which of the following statements correctly distinguishes constructive waves from destructive waves?

(A) Constructive waves have a strong backwash and weak swash, removing sediment from the beach.

(B) Destructive waves are associated with calm weather and long wavelengths.

(C) Destructive waves result in the gradual expansion of the continental shelf.

(D) Constructive waves have a strong swash and weak backwash, depositing sediment on the beach.

(E) Answer not known

46. Which of the following pairs regarding tidal patterns is correctly matched?

(A) Semi-diurnal tide - Two high tides and two low tides of unequal heights each day

(B) Mixed tide - Two high tides and two low tides of exactly equal heights each day

(C) Diurnal tide - One high tide and one low tide each day

(D) Spring tide - Occurs exactly once a year during the vernal equinox

(E) Answer not known

47. Based on the tidal amplitude along the Indian coast, which region holds the maximum potential for harnessing tidal energy?

(A) Gulf of Mannar

(B) Gulf of Kutch

(C) Coromandel Coast

(D) Malabar Coast

(E) Answer not known

48. Select the correct sequence of events during the generation and impact of a tsunami:

(A) Underwater earthquake → Wave shoaling → High-speed propagation → Coastal inundation

(B) Underwater earthquake → High-speed propagation → Wave shoaling → Coastal inundation

(C) Wave shoaling → Underwater earthquake → High-speed propagation → Coastal inundation

(D) Underwater earthquake → Coastal inundation → High-speed propagation → Wave shoaling

(E) Answer not known

49. Which of the following statements regarding the 2004 Indian Ocean Tsunami is incorrect?

(A) The tsunami warning system in the Indian Ocean successfully alerted all coastal communities hours before the impact.

(B) It was generated by a massive undersea earthquake off the coast of Sumatra, Indonesia.

(C) Nagapattinam was one of the most severely affected districts in Tamil Nadu.

(D) The event triggered the establishment of the Indian National Centre for Ocean Information Services (INCOIS) tsunami early warning system.

(E) Answer not known

50. Consider the following factors:

I. Wind speed

II. Wind duration

III. Fetch (distance of open water)

IV. Salinity of the water

Which of the above factors primarily determine the size of wind-generated ocean waves?

(A) I, II and III

(B) I, III and IV

(C) I and II

(D) II and IV

(E) Answer not known

51. Consider the following statements:

Assertion (A): As a tsunami approach shallow coastal waters, its speed decreases but its wave height increases drastically.

Reason (R): The friction with the shallow sea floor compresses the wave energy into a smaller

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81. The total length of the coastline of India, including the mainland and the island groups (Andaman & Nicobar and Lakshadweep), is approximately:
(A) 5422.6 km
(B) 6100.0 km
(C) 7516.6 km
(D) 8120.5 km
(E) Answer not known

82. Consider the following statements regarding the West coast of India:
I. It is characterized by a narrow coastal plain bordered by the Western Ghats.
II. It is known for extensive delta formations by major rivers.
III. It features numerous estuaries, backwaters, and lagoons.
Which of the above statements is/are correct?
(A) I and II
(B) II and III
(C) I and III
(D) I only
(E) Answer not known

83. Consider the following statements:
Assertion (A): The East coast of India is highly prone to the formation of large deltas.
Reason (R): Major east-flowing rivers like the Mahanadi, Godavari, Krishna, and Cauveri bring massive sediment loads and deposit them along the broad, shallow continental shelf.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

84. Match the coastal regions in List I with their respective states in List II:
List I: (Coastal Regions)
P. Konkan Coast
Q. Malabar Coast
R. Coromandel Coast
S. Northern Circars
List II: (States)
I. Kerala
II. Tamil Nadu
III. Maharashtra
IV. Andhra Pradesh & Odisha
(A) P-I, Q-III, R-IV, S-II
(B) P-III, Q-II, R-I, S-IV
(C) P-II, Q-I, R-IV, S-III
(D) P-III, Q-I, R-II, S-IV
(E) Answer not known

85. Under the Coastal Regulation Zone (CRZ) Notification 2019, which of the following statements correctly describes CRZ-I areas?
(A) Coastal regions designated for extensive urban, industrial, and commercial development projects.
(B) Ecologically sensitive areas like mangroves and corals where construction is prohibited.
(C) Areas covering the territorial waters and seabed up to the 12 nautical mile offshore limit.
(D) Stable rural coastal areas meant strictly for traditional agricultural and farming activities.
(E) Answer not known

86. Which of the following pairs of CRZ classifications and their definitions is correctly matched?
(A) CRZ-II - Relatively undisturbed rural areas
(B) CRZ-III - Highly developed urban coastal areas
(C) CRZ-I - Ecologically Sensitive Areas
(D) CRZ-IV - Land area between High Tide Line and 500 meters landward
(E) Answer not known

87. In combating severe coastal erosion along vulnerable stretches, the deployment of "Geobags" relies primarily on what mechanism?
(A) Chemical solidification of the surrounding seawater to form rigid and permanent barriers.
(B) Injecting massive amounts of specialized concrete directly into the active coastal surf zone.
(C) Planting genetically modified seaweed to rapidly calcify the beach sand against erosion.
(D) Sand-filled synthetic fabric bags used to absorb wave energy and stabilize the shoreline.
(E) Answer not known

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(E) Answer not known

59. Which bio-shield feature is extensively promoted by the Tamil Nadu government along its coastline to mitigate the impact of tsunamis and severe cyclonic storms?
(A) Mangrove and Casuarina shelter belts
(B) Submarine acoustic barriers
(C) Concrete sea walls stretching the entire coast
(D) Offshore floating breakwaters
(E) Answer not known

60. From the dynamics of gravitational forces, it can be inferred that during a neap tide:
(A) The Earth's rotation completely neutralizes the Moon's gravitational pull.
(B) Both the Sun and Moon are aligned on the exact same side of the Earth.
(C) The solar tide actively cancels out a portion of the lunar tide.
(D) The ocean water completely retracts from the continental shelf.
(E) Answer not known

61. The average salinity of the world's oceans is approximately:
(A) 15 parts per thousand (ppt)
(B) 25 parts per thousand (ppt)
(C) 35 parts per thousand (ppt)
(D) 45 parts per thousand (ppt)
(E) Answer not known

62. Consider the following factors:
I. Rate of evaporation
II. Amount of precipitation
III. Influx of river water
Which of the above factors affect the surface salinity of ocean water?
(A) I and II
(B) II and III
(C) I and III
(D) I, II and III
(E) Answer not known

63. Consider the following statements:
Assertion (A): Ocean acidification poses a severe threat to marine organisms that build shells and skeletons from calcium carbonate.
Reason (R): Increased absorption of atmospheric carbon dioxide by oceans decreases the concentration of carbonate ions in the water.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

64. Match the type of coral reef in List I with its characteristic feature in List II:
List I: (Type of Coral Reef)
P. Fringing Reef
Q. Barrier Reef
R. Atoll
S. Patch Reef
List II: (Characteristic Feature)
I. Circular or horseshoe-shaped reef enclosing a lagoon
II. Reef separated from the mainland by a wide, deep lagoon
III. Small, isolated reef platform typically found within a lagoon
IV. Reef directly attached to a shore with little or no lagoon
(A) P-II, Q-IV, R-I, S-III
(B) P-I, Q-III, R-II, S-IV
(C) P-IV, Q-I, R-III, S-II
(D) P-IV, Q-II, R-I, S-III
(E) Answer not known

65. Which of the following statements correctly describes the 'thermocline' layer in the ocean?
(A) A transition layer where temperature decreases rapidly with increasing depth.
(B) The surface layer where water temperature remains uniformly high due to direct solar heating.
(C) The deepest layer of the ocean where water temperature reaches levels near absolute zero.
(D) A localized zone of warm water created solely by the activity of deep hydrothermal vents.
(E) Answer not known

66. Which of the following pairs of Indian coral reef regions and their locations is correctly matched?
(A) Gulf of Kutch - East Coast of India
(B) Lakshadweep - Bay of Bengal
(C) Gulf of Mannar - Tamil Nadu Coast

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37. India has an extensive Exclusive Economic Zone (EEZ) covering an estimated area of:
(A) 1.02 million sq. km
(B) 2.02 million sq. km
(C) 3.50 million sq. km
(D) 4.10 million sq. km
(E) Answer not known

38. Consider the following statements regarding the South Equatorial Current in the Indian Ocean:
I. It flows continuously from east to west throughout the year.
II. It is driven primarily by the Southeast Trade Winds.
III. Upon reaching the African coast, it bifurcates into the Mozambique and Madagascar currents.
IV. It reverses its direction completely during the southwest monsoon.
V. It transports warm water from the eastern Indian Ocean towards the west.
Which of the above statements is/are correct?
(A) I, II, III and V
(B) II, III, IV and V
(C) I, II and V
(D) III, IV and V
(E) Answer not known

39. Identify the prominent ocean current characterized by transporting large volumes of warm equatorial water up the eastern coast of North America, significantly moderating the climate of Western Europe.
(A) Kuroshio Current
(B) Agulhas Current
(C) Benguela Current
(D) Gulf Stream
(E) Answer not known

40. From the phenomenon of the complete reversal of surface ocean currents in the North Indian Ocean, it can be inferred that:
(A) The seasonal monsoon wind patterns exercise dominant control over these surface currents.
(B) The gravitational pull of the moon and sun acts differently on the Northern Hemisphere oceans.
(C) The global thermohaline circulation in the Indian Ocean basin is considered exceptionally weak.
(D) The Indian Ocean floor lacks significant deep-water trenches required to stabilize currents.
(E) Answer not known

41. When the Sun, the Earth, and the Moon align in a straight line, the gravitational forces combine to produce exceptionally high and low tides. These are known as:
(A) Neap tides
(B) Spring tides
(C) Diurnal tides
(D) Equatorial tides
(E) Answer not known

42. Consider the following statements regarding neap tides:
I. They occur during the first and third quarter phases of the moon.
II. The gravitational pull of the sun and the moon act at right angles to each other.
III. They produce the highest possible high tides and lowest possible low tides.
Which of the above statements is/are correct?
(A) I and II
(B) II and III
(C) I and III
(D) I only
(E) Answer not known

43. Consider the following statements:
Assertion (A): A tsunami wave traveling in the deep ocean has a very long wavelength and low amplitude, making it barely noticeable to ships.
Reason (R): Tsunamis in deep water travel at extremely high speeds, often exceeding 700 km/h, due to the immense depth of the ocean.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

44. Match the ocean wave terms in List I with their definitions in List II:
List I: (Ocean Wave Terms)
P. Wave Crest
Q. Wave Trough
R. Wave Height

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(B) The ongoing decrease in ocean pH caused by the uptake of anthropogenic CO_2.
(C) The natural release of sulfur dioxide from submerged submarine hydrothermal vents and volcanoes.
(D) The increase in ocean salinity levels due to excessive evaporation in tropical regions.
(E) Answer not known

74. Which of the following pairs of threats to marine biodiversity and their direct impacts is incorrectly matched?
(A) Overfishing - Depletion of fish stocks and disruption of food webs
(B) Introduction of invasive species - Enhanced native biodiversity and resilience
(C) Nutrient pollution - Eutrophication and formation of dead zones
(D) Deep sea mining - Destruction of benthic habitats
(E) Answer not known

75. Coral reefs in Lakshadweep are primarily classified under which category based on their geological formation?
(A) Atolls
(B) Fringing Reefs
(C) Barrier Reefs
(D) Patch Reefs
(E) Answer not known

76. Arrange the following layers of the ocean water column sequentially from the surface to the deep sea floor based on temperature profile:
I. Thermocline layer
II. Epipelagic mixed layer (Surface layer)
III. Deep cold-water layer
(A) II, I, III
(B) I, II, III
(C) III, I, II
(D) II, III, I
(E) Answer not known

77. The Sundarbans, the largest contiguous mangrove forest in the world, is primarily located in the delta of which river system?
(A) Godavari and Krishna
(B) Narmada and Tapi
(C) Mahanadi and Brahmani
(D) Ganga and Brahmaputra
(E) Answer not known

78. Consider the following ecological functions provided by mangroves in coastal regions:
I. Acting as a nursery ground for various fish and crustacean species.
II. Stabilizing the coastline and preventing coastal erosion.
III. Filtering coastal runoff and improving water quality.
IV. Providing a natural barrier against storm surges and tsunamis.
V. Increasing the salinity of surrounding groundwater aquifers.
Which of the above statements are correct?
(A) I, II, III and IV
(B) II, III, IV and V
(C) I, II and V
(D) III, IV and V
(E) Answer not known

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79. Which specific marine habitat feature makes the Gulf of Mannar uniquely biodiverse and led to its declaration as a Marine National Park?
(A) The presence of deep ocean trenches that provide unique habitats for abyssal marine creatures.
(B) A network of 21 islands harboring both fringing coral reefs and seagrass beds.
(C) The convergence of major cold and warm ocean currents that bring diverse nutrients to the area.
(D) Extensive underwater hydrothermal vents that support extremophile bacterial communities.
(E) Answer not known

80. Based on the effects of ocean acidification, what can be inferred about the future of calcifying marine organisms like corals and mollusks?
(A) They will adapt to utilize silica or other minerals for structural shell formation over time.
(B) They will migrate exclusively to freshwater environments to survive the changing ocean chemistry.
(C) They will experience explosive population growth due to the complete absence of predators.
(D) They will face difficulty maintaining calcium carbonate structures, reducing growth rates.
(E) Answer not known

(D) Andaman and Nicobar Islands - Arabian Sea
(E) Answer not known

67. How do mangroves contribute significantly to mitigating global climate change?
(A) By acting as efficient carbon sinks, sequestering blue carbon in biomass and soils.
(B) By releasing large quantities of purified oxygen directly into the upper ozone layer.
(C) By reflecting solar radiation back into space through their dense and waxy canopy.
(D) By converting atmospheric nitrogen into stable soil nitrates for agricultural growth.
(E) Answer not known

68. What is the general sequence of ocean surface salinity distribution as one moves from the equator to the poles?
(A) Highest at the equator, decreasing towards the tropics, and increasing towards the poles.
(B) Lowest at the equator, gradually and steadily increasing in concentration towards the poles.
(C) Moderate at the equator, highest in subtropics, and lowest at the poles.
(D) Uniformly constant across all latitudes from the equator to the extreme polar regions.
(E) Answer not known

69. Which of the following is an incorrect statement regarding coral bleaching?
(A) It occurs when corals are stressed by changes in conditions such as temperature, light, or nutrients.
(B) Bleached corals are completely dead and cannot recover under any circumstances.
(C) The stress causes corals to expel the symbiotic algae (zooxanthellae) living in their tissues.
(D) Prolonged periods of elevated sea surface temperatures are the primary cause of mass bleaching events.
(E) Answer not known

70. Consider the following statements regarding seagrass meadows:
I. They are underwater marine flowering plants found in shallow coastal waters.
II. They provide crucial habitat and food for marine mammals like the dugong.
III. They are known for destabilizing the seabed and increasing coastal erosion.
IV. They are highly efficient at sequestering carbon from the atmosphere.
Which of the above statements is/are correct?
(A) I, II and IV
(B) I, II and III
(C) I and IV
(D) II and IV
(E) Answer not known

71. Consider the following statements:
Assertion (A): The Gulf of Mannar is a critical conservation priority area for the dugong (sea cow).
Reason (R): The Gulf of Mannar has extensive and healthy seagrass meadows, which form the primary diet of dugongs.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

72. Match the prominent mangrove regions of India in List I with their respective states in List II:
List I: (Mangrove Regions)
P. Sundarbans
Q. Pichavaram
R. Bhitarkanika
S. Coringa
List II: (States)
I. Odisha
II. West Bengal
III. Andhra Pradesh
IV. Tamil Nadu
(A) P-II, Q-IV, R-I, S-III
(B) P-II, Q-I, R-IV, S-III
(C) P-IV, Q-II, R-I, S-III
(D) P-I, Q-IV, R-II, S-III
(E) Answer not known

73. What defines the process of "Ocean Acidification"?
(A) The cumulative accumulation of acidic industrial effluents and pollutants in coastal zones.

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88. Select the correct sequential order of the divisions of the West Coast of India from North to South:
(A) Malabar Coast, Konkan Coast, Gujarat Coast
(B) Gujarat Coast, Konkan Coast, Malabar Coast
(C) Konkan Coast, Gujarat Coast, Malabar Coast
(D) Gujarat Coast, Malabar Coast, Konkan Coast
(E) Answer not known

89. Which of the following statements regarding the Coromandel Coast is incorrect?
(A) It extends roughly from the Krishna River delta all the way down to Kanyakumari.
(B) It has steep, rugged cliffs directly facing the sea with no coastal plains.
(C) It receives a significant portion of its annual rainfall from the Northeast Monsoon winds.
(D) It contains several historical ports and major river deltas essential for trade.
(E) Answer not known

90. Consider the following factors:
I. Sea-level rise due to climate change
II. Construction of dams on rivers reducing sediment supply to the coast
III. Destruction of natural barriers like mangroves
IV. Increased tectonic uplift of the continental shelf
Which of the above are major causes of coastal erosion in India?
(A) I, II and III
(B) I, III and IV
(C) I and IV
(D) II and IV
(E) Answer not known

91. Consider the following statements:
Assertion (A): The western coastline of India is relatively straight and lacks deep natural indentations in the southern part.
Reason (R): The West coast is largely an emergent coast with a very wide continental shelf that prevents indentation.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

92. Match the specific features in List I with their corresponding coastal regions in List II:
List I: (Specific Features)
P. Kayals (Backwaters)
Q. Gulf of Kutch
R. Chilika Lake
S. Gulf of Mannar
List II: (Coastal Regions)
I. Gujarat Coast
II. Malabar Coast
III. Coromandel Coast / Tamil Nadu
IV. Northern Circars / Odisha
(A) P-I, Q-II, R-III, S-IV
(B) P-IV, Q-I, R-II, S-III
(C) P-II, Q-I, R-IV, S-III
(D) P-II, Q-III, R-IV, S-I
(E) Answer not known

93. How is a "straight coastline" defined in coastal geography?
(A) A coastline with numerous deep bays, gulfs, and estuaries shaped by erosion.
(B) A coastline exclusively formed by the continuous deposition of river delta sediments.
(C) A coastline that runs precisely parallel to the equator regardless of geography.
(D) A coastline with a smooth outline without significant indentations.
(E) Answer not known

94. Which of the following pairs regarding coastal erosion hotspots and their states is incorrectly matched?
(A) Valiyathura - Kerala
(B) Royapuram (North Chennai) - Tamil Nadu
(C) Kutch - Odisha
(D) Sagar Island - West Bengal
(E) Answer not known

95. Which type of coast is typically characterized by the dominance of river deposition over marine erosion, leading to a prograding shoreline?
(A) Submergent ria coast
(B) Deltaic coast
(C) Fjord coast

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(D) Fault-scarp coast
(E) Answer not known

96. Arrange the following major deltas along the East Coast of India from North to South:
I. Cauveri Delta
II. Mahanadi Delta
III. Krishna Delta
IV. Godavari Delta
(A) II, IV, III, I
(B) II, III, IV, I
(C) IV, III, II, I
(D) I, III, IV, II
(E) Answer not known

97. Which state in India has the longest mainland coastline, highly indented and suitable for natural harbors?
(A) Gujarat
(B) Tamil Nadu
(C) Andhra Pradesh
(D) Maharashtra
(E) Answer not known

98. Consider the following statements about the Coastal Regulation Zone (CRZ) Notification 2019:
I. It aims to promote sustainable development while conserving coastal environments.
II. It delegates the clearance of certain projects in CRZ areas directly to State Governments.
III. It completely bans traditional fishing activities to protect marine life.
IV. It encourages eco-tourism in designated coastal zones.
V. It was issued under the Environment (Protection) Act, 1986.
Which of the above statements are correct?
(A) I, II, IV and V
(B) I, III, IV and V
(C) I, II and V
(D) III, IV and V
(E) Answer not known

99. The Malabar Coast is particularly famous for a unique network of brackish lagoons and lakes lying parallel to the Arabian Sea. These are known as:
(A) Kayals
(B) Rann
(C) Mangroves
(D) Atolls
(E) Answer not known

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100. From the geographical orientation of the Coromandel Coast, what can be inferred about its rainfall pattern?
(A) It receives almost zero rainfall throughout the year due to a permanent rain shadow effect.
(B) It receives its highest rainfall exclusively during the pre-monsoon summer convective showers.
(C) It experiences continuous year-round cyclonic rainfall without any distinct dry season.
(D) It intercepts the retreating Northeast Monsoon winds, receiving winter precipitation.
(E) Answer not known

101. What is the approximate total length of the coastline of Tamil Nadu?
(A) 850 km
(B) 940 km
(C) 1076 km
(D) 1250 km
(E) Answer not known

102. Consider the following statements regarding the Gulf of Mannar Marine National Park:
I. It is located between India and Sri Lanka.
II. It consists of a chain of 21 islands surrounded by shallow waters.
III. It is strictly a deep-water sanctuary with no coral reefs.
Which of the above statements is/are correct?
(A) I and II
(B) II and III
(C) I and III
(D) I only
(E) Answer not known

103. Consider the following statements:
Assertion (A): The Palk Strait serves as a major international shipping route for ultra-large crude carriers bypassing Sri Lanka.
Reason (R): The Palk Strait is characterized by extremely shallow depths and the presence of Adam's Bridge.
(A) Both A and R are true and R is the correct explanation of A.

(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

104. Match the geographical features of Tamil Nadu's coast in List I with their descriptions in List II:
List I: (Geographical Features)
P. Point Calimere
Q. Adam's Bridge
R. Palk Bay
S. Gulf of Mannar
List II: (Descriptions)
I. Semi-enclosed shallow water body between India and Sri Lanka
II. Biosphere reserve known for dugong conservation
III. A chain of limestone shoals between Pamban Island and Mannar Island
IV. A prominent headland marking a sharp turn in the coastline
(A) P-IV, Q-III, R-I, S-II
(B) P-I, Q-II, R-III, S-IV
(C) P-III, Q-I, R-IV, S-II
(D) P-IV, Q-I, R-II, S-III
(E) Answer not known

105. Which of the following statements correctly describes the Sethusamudram Ship Channel Project?
(A) Constructing a permanent land bridge directly connecting Rameswaram to the Jaffna peninsula.
(B) Dredging a channel through Palk Bay and Adam's Bridge to reduce shipping distances.
(C) A project focused on developing extensive artificial coral reefs to boost marine tourism.
(D) Deepening the Bay of Bengal floor to facilitate large-scale commercial deep-sea mining.
(E) Answer not known

106. Which of the following pairs of marine species and their conservation status in Tamil Nadu is correctly matched?
(A) Dugong is an aggressive apex predator hunted throughout the Gulf of Mannar region.
(B) Olive Ridley turtles nest along the Chennai and Nagapattinam coasts.
(C) Whale Shark is endemic strictly to the Palk Strait estuaries and tidal river mouths.
(D) Saltwater Crocodile is commonly found nesting on the urban Marina Beach in Chennai.
(E) Answer not known

107. The proposed Sethusamudram project faced opposition from environmentalists primarily because:
(A) Dredging could disturb fragile marine ecosystems like coral reefs and seagrass beds.
(B) It would permanently lower the average sea level across the entire Bay of Bengal.
(C) It would require draining the Palk Bay completely to create a dry land passage.
(D) It would increase the salinity of groundwater in many entirely landlocked states.
(E) Answer not known

108. Arrange the following marine features lying between India and Sri Lanka from North to South:
I. Palk Bay
II. Palk Strait
III. Gulf of Mannar
IV. Adam's Bridge (Rama Setu)
(A) II, I, IV, III
(B) I, II, III, IV
(C) II, IV, I, III
(D) I, IV, II, III
(E) Answer not known

109. Which of the following statements regarding the fishing rights dispute in the Palk Bay is incorrect?
(A) It involves frequent arrests of Indian fishermen by the Sri Lankan Navy in contested waters.
(B) Bottom trawling by Indian fishermen is a major point of contention due to its impact.
(C) Traditional fishing grounds in the narrow strait often overlap the international boundary.
(D) The dispute was resolved by ceding Katchatheevu in 1974, stopping all crossings.
(E) Answer not known

110. Consider the following statements regarding sea turtle conservation in Tamil Nadu:

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I. The Tamil Nadu Forest Department actively sets up hatcheries during the nesting season.
II. Olive Ridley turtles are the most common species nesting along this coast.
III. Coastal illumination (light pollution) helps hatchlings navigate easily to the sea.
IV. Turtle excluder devices (TEDs) are advocated for trawl nets to prevent turtle mortality.

Which of the above statements is/are correct?
(A) I, II and IV
(B) I, II and III
(C) I and IV
(D) II and IV
(E) Answer not known

111. Consider the following statements:
Assertion (A): The dugong population in the Gulf of Mannar is highly vulnerable and endangered.
Reason (R): Dugongs depend exclusively on dense coral reefs for shelter, which are being destroyed by coastal development.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

112. Match the specific locations in List I with their associated significance in Tamil Nadu in List II:
List I: (Specific Locations)
P. Kurusadai Island
Q. Dhanushkodi
R. Katchatheevu
S. Chennai Coast
List II: (Significance)
I. Major Olive Ridley nesting site
II. Island of high biological significance in Gulf of Mannar
III. Abandoned town devastated by the 1964 cyclone
IV. Uninhabited islet at the center of a fishing dispute
(A) P-III, Q-II, R-I, S-IV
(B) P-IV, Q-I, R-II, S-III
(C) P-I, Q-IV, R-III, S-II
(D) P-II, Q-III, R-IV, S-I
(E) Answer not known

113. Within the context of the Gulf of Mannar, what does its designation as a "Biosphere Reserve" imply?
(A) An area for conservation of biodiversity balanced with sustainable human use.
(B) A zone where human entry and economic activities are banned under military enforcement.
(C) An area dedicated exclusively to offshore oil and gas exploration and extraction.
(D) A coastal stretch modified entirely into a large-scale industrial aquaculture zone.
(E) Answer not known

114. Which of the following pairs of coastal districts of Tamil Nadu and their geographical position is incorrectly matched?
(A) Kanyakumari meets the Arabian Sea, Indian Ocean, and the Bay of Bengal waters.
(B) Ramanathapuram borders both the Palk Bay and the Gulf of Mannar ecosystems.
(C) Tirunelveli is located north of Chennai on the Coromandel coast.
(D) Nagapattinam was one of the districts most severely impacted by the 2004 Tsunami.
(E) Answer not known

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115. Dugongs are marine mammals primarily classified ecologically as:
(A) Herbivorous grazers
(B) Apex carnivores
(C) Benthic filter feeders
(D) Pelagic scavengers
(E) Answer not known

116. Arrange the following coastal features along the Tamil Nadu coastline from North to South:
I. Marina Beach
II. Point Calimere
III. Pamban Island
IV. Cape Comorin (Kanyakumari)
(A) I, II, III, IV
(B) II, I, III, IV
(C) I, III, II, IV
(D) I, II, IV, III
(E) Answer not known

117. The Gulf of Mannar Marine National Park comprises a group of small islands. How many islands constitute this core protected area?
(A) 11

(B) 21
(C) 36
(D) 52
(E) Answer not known

118. Consider the following statements regarding the fishing dispute in the Palk Bay region:
I. The International Maritime Boundary Line (IMBL) between India and Sri Lanka was demarcated in the 1970s.
II. Indian mechanized trawlers often cross the IMBL into Sri Lankan waters due to depleted catch on the Indian side.
III. The dispute has led to a complete and permanent halt of all fishing activities in Palk Bay by both nations.
IV. Diplomatic efforts, including Joint Working Groups, are frequently held to resolve the fishermen issue.
V. Sri Lankan legislation strictly bans destructive fishing methods like bottom trawling in their waters.
Which of the above statements are correct?
(A) I, II, IV and V
(B) II, III, IV and V
(C) I, II and V
(D) III, IV and V
(E) Answer not known

119. Which of the following features uniquely defines Adam's Bridge (Rama Setu)?
(A) An artificial concrete barrage built during the colonial era to control tidal flow.
(B) A deep, navigable trench running parallel to the entire length of the Coromandel coast.
(C) An active underwater volcanic ridge emerging above sea level during the monsoon.
(D) A chain of limestone shoals connecting Pamban Island to Mannar Island.
(E) Answer not known

120. Based on the geographic proximity and the shallow nature of Palk Bay, what can be inferred regarding the socio-cultural ties of traditional coastal communities in the region?
(A) Shallow waters facilitated historical cultural and economic ties with northern Sri Lanka.
(B) They have remained entirely isolated with zero historical or cultural cross-strait interactions.
(C) The geography made marine navigation impossible, restricting interaction to modern air travel only.
(D) It led to the immediate assimilation of Sri Lankan culture, erasing local coastal traditions.
(E) Answer not known

121. Marina Beach in Chennai is widely recognized globally as:
(A) The beach with the highest concentration of coral reefs in India.
(B) The longest natural urban beach in India and the second longest in the world.
(C) A secluded, private beach reserved exclusively for defense purposes.
(D) The only beach in India completely devoid of any human settlements.
(E) Answer not known

122. Consider the following components:
I. Renewable energy from the ocean
II. Deep sea mining
III. Unsustainable, unregulated distant-water fishing
Which of the above are recognized components of India's "Blue Economy" vision?
(A) I and II
(B) II and III
(C) I and III
(D) I only
(E) Answer not known

123. Consider the following statements:
Assertion (A): The National Institute of Ocean Technology (NIOT), located in Chennai, plays a critical role in India's deep sea mining efforts.
Reason (R): NIOT develops specific technologies for the extraction of polymetallic nodules from the deep seabed in the Central Indian Ocean Basin.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

124. Match the forms of ocean energy in List I with their generating mechanism in List II:

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(C) Ministry of Science and Technology
(D) Ministry of Ports, Shipping and Waterways
(E) Answer not known

138. Consider the following statements regarding coastal livelihoods in Tamil Nadu:
I. The fisheries sector is a major contributor to the state's economy and export earnings.
II. Traditional fishing communities often face conflicts with large mechanized trawlers.
III. Coastal livelihoods are entirely unaffected by climate change or extreme weather events.
IV. Women play a significant role in post-harvest activities like fish processing and vending.
V. Seaweed cultivation has emerged as an alternative livelihood for coastal women in regions like Ramanathapuram.
Which of the above statements are correct?
(A) I, II, IV and V
(B) II, III, IV and V
(C) I, II and V
(D) III, IV and V
(E) Answer not known

139. Which of the following cultural or ecological features is strongly associated with Marina Beach?
(A) It houses memorials celebrating Tamil literature and historical figures.
(B) It serves as a major and essential breeding ground for the saltwater crocodile.
(C) It is the exact location marking the southernmost tip of the Indian peninsula.
(D) It is a rocky beach characterized by massive and ancient basalt formations.
(E) Answer not known

140. Based on the components of the Blue Economy, what can be inferred about its future significance for Tamil Nadu?
(A) It will lead to the complete abandonment of all traditional fishing in favor of deep-sea mining.
(B) It is largely irrelevant to Tamil Nadu due to its relatively short and unproductive coastline.
(C) It holds potential for revenue and jobs if ecological balance is maintained.
(D) It strictly mandates the shifting of coastal populations inland to create economic zones.
(E) Answer not known

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IV. It involves the promotion of coastal tourism and marine biotechnology.

Which of the above statements is/are correct?

(A) I, II and IV
(B) I, III and IV
(C) I and II
(D) II and IV
(E) Answer not known

131. Consider the following statements:

Assertion (A): India has been granted exclusive rights by the International Seabed Authority to explore polymetallic nodules in the Central Indian Ocean Basin.

Reason (R): Polymetallic nodules are exclusively found within India's 200 nautical mile Exclusive Economic Zone.

(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

132. Match the ocean research organizations in List I with their headquarters/locations in List II:

List I: (Ocean Research Organizations)

P. National Institute of Ocean Technology (NIOT)
Q. Indian National Centre for Ocean Information Services (INCOIS)
R. National Institute of Oceanography (NIO)
S. National Centre for Polar and Ocean Research (NCPOR)

List II: (Headquarters/Locations)

I. Hyderabad
II. Chennai
III. Dona Paula (Goa)
IV. Vasco da Gama (Goa)

(A) P-I, Q-II, R-IV, S-III
(B) P-III, Q-IV, R-I, S-II
(C) P-II, Q-III, R-I, S-IV
(D) P-II, Q-I, R-III, S-IV
(E) Answer not known

133. The "Blue Economy" is best defined as:

(A) The economic model developed solely for the extraction of fresh water from oceans.
(B) The sustainable use of ocean resources for growth while preserving ecosystem health.
(C) A global initiative to paint coastal infrastructure blue to reflect incoming sunlight.
(D) The privatization of international waters by corporations for commercial shipping.
(E) Answer not known

134. Which of the following pairs concerning coastal management in Tamil Nadu is incorrectly matched?

(A) Groynes - Coastal protection structures built perpendicular to the shoreline
(B) Seawalls - Coastal protection structures built parallel to the shoreline
(C) Bio-shields - Chemical sprays used to kill invasive marine weeds
(D) CRZ - Regulations to manage activities in coastal areas
(E) Answer not known

135. Deep sea mining targets several key resources. Which of the following is not typically targeted in deep seabed mining?

(A) Polymetallic nodules found on the abyssal plains.
(B) Seafloor massive sulphides near volcanic vents.
(C) Cobalt-rich crusts on various seamounts.
(D) Coastal placer deposits like ilmenite and garnet.
(E) Answer not known

136. Arrange the typical phases of coastal disaster risk management in the correct cycle:

I. Preparedness and early warning
II. Relief and response
III. Mitigation and prevention
IV. Recovery and reconstruction

(A) III, I, II, IV
(B) I, II, III, IV
(C) II, IV, I, III
(D) I, III, II, IV
(E) Answer not known

137. The National Institute of Ocean Technology (NIOT) was established in November 1993 under which Ministry of the Government of India?

(A) Ministry of Environment, Forest and Climate Change
(B) Ministry of Earth Sciences

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Oceans, its defining current is characterized by cold temperatures rather than warm water flow.

10. (A) I, II and III
The world's major oceans have defining features related to their size and location. The Pacific is the largest and deepest, while the Atlantic is bounded by the Americas, Europe, and Africa. The Arctic Ocean is the smallest and shallowest. While the Indian Ocean is named after India, scientific classifications often focus on the physical and geographical attributes.

11. (A) Both A and R are true and R is the correct explanation of A.
Abyssal plains are among the most level regions on Earth. Their extreme flatness is caused by the slow, continuous accumulation of fine-grained sediments, such as clay and silt, over millions of years. These sediments eventually bury the rugged volcanic topography of the oceanic crust, creating a smooth surface that stretches across vast distances in the deep ocean.

12. (C) P-III, Q-IV, R-I, S-II
Distinct oceanographic features are associated with specific ocean basins. The Mariana Trench is located in the Pacific, while the Mid-Atlantic Ridge is the central feature of the Atlantic. The Ninety East Ridge is a significant feature in the Indian Ocean, and the Lomonosov Ridge is found in the Arctic Ocean. These structures help define the unique topography.

13. (D) The steeply descending zone linking the continental shelf to the deep ocean floor.
The continental slope is a critical part of the ocean floor topography that marks the transition from the continental margin to the deep sea. It begins where the relatively flat continental shelf ends and descends steeply toward the oceanic basin. This zone is characterized by a significant increase in depth over a relatively short horizontal distance from land.

14. (C) Bathyal zone - The sunlight surface layer of the ocean
Ocean zones are classified by depth and light penetration. The photic zone is the surface layer where sunlight allows for photosynthesis. In contrast, the bathyal zone exists at depths between 200 and 4000 meters, where sunlight is insufficient for plant growth. Thus, describing the bathyal zone as a sunlight surface layer is factually inaccurate in marine biology.

15. (B) Aphotic zone
The ocean is divided into layers based on the amount of light they receive. The photic zone is the upper layer where photosynthesis can occur. Below this lies the aphotic zone, which is the entirely dark, deeper part of the ocean. In this region, sunlight cannot penetrate, making it impossible for photosynthetic organisms to survive without external energy.

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16. (A) II, I, IV, III
Earth's oceans vary significantly in size and depth. The Pacific Ocean is the largest, followed by the Atlantic Ocean. The Indian Ocean ranks as the third largest body of water globally. The Arctic Ocean is the smallest and shallowest of the major oceans. This sequence reflects the total surface area covered by each oceanic basin across the planet.

17. (C) wider than that of the western coast.
The eastern continental shelf of India, along the Bay of Bengal, is generally wider than the western shelf. This is primarily due to the extensive sediment deposition from major east-flowing rivers like the Ganga, Godavari, and Krishna. These sediments accumulate over time, extending the shelf further into the sea compared to the relatively narrower western margin.

18. (A) I, II, III and IV
The Indian Ocean floor contains diverse features, including the Sunda Trench and the Ninety East Ridge. The continental shelf is notably wider off the coast of Maharashtra due to its geological history. Additionally, the Mid-Indian Ridge is a central feature of the basin. Unlike some oceans, the Indian Ocean does contain extensive abyssal plains formed by sediment.

19. (A) Mid-Ocean Ridge System
The Mid-Ocean Ridge System is the longest mountain range on Earth, stretching over 65,000 kilometers through all the world's oceans. It is formed by plate tectonics at divergent boundaries where new oceanic crust is created. This continuous submarine chain is a primary geological feature that influences ocean

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1. (C) Third
The Indian Ocean is the third largest of the world's oceanic divisions, covering approximately 70.56 million square kilometers. It follows the Pacific and Atlantic Oceans in size. It is bounded by Asia to the north, Africa to the west, and Australia to the east, making it unique as it is landlocked to the north.

2. (C) I and III
Oceanography is divided into several specialized branches that explore different aspects of the marine environment. Physical oceanography investigates the properties and movements of seawater, including waves and currents. Geological oceanography examines the structure and topography of the ocean floor. However, chemical oceanography specifically focuses on the chemical composition of seawater rather than the distribution of organisms.

3. (A) Both A and R are true and R is the correct explanation of A.
The Indian Ocean serves as a vital corridor for global trade, especially for energy resources originating from the Middle East. It connects major economies in Africa, Asia, and Europe through critical sea lines of communication. For India, maintaining security in this region is essential for protecting national trade interests and ensuring a steady supply of energy imports.

4. (D) P-II, Q-IV, R-I, S-III
The ocean floor features a distinct topographical progression starting from the land. The continental shelf is a shallow, gently sloping platform. It leads to the continental slope, which has a much steeper gradient toward the deep sea. Abyssal plains are vast, flat regions of the deep ocean, while ocean ridges are mountain chains formed by tectonic activity.

5. (B) It is a major source of petroleum, natural gas, and rich fishing grounds.
The continental shelf is of immense economic value to coastal nations because it contains significant deposits of petroleum and natural gas. These shallow regions also receive high levels of sunlight and nutrients, making them highly productive zones for commercial fishing. India's shelf areas, like the Mumbai High, are primary sites for offshore hydrocarbon extraction and marine resources.

6. (C) Indian Ocean - Landlocked in the north
Each major ocean has distinct geographical characteristics. The Pacific Ocean is characterized by the Ring of Fire, while the Atlantic Ocean is known for its "S" shape. The Indian Ocean is unique because it is landlocked to the north by the Asian landmass. This enclosure significantly influences its current patterns and climate, distinguishing it from other oceans.

7. (D) It bisects the basin into two halves with shallow central depths.
The Mid-Atlantic Ridge is a massive submarine mountain range that runs through the center of the Atlantic Ocean. This geological feature is formed by divergent plate boundaries where new crust is created. It effectively divides the ocean basin into two halves, creating relatively shallow depths along the center of the ocean compared to the deep abyssal plains.

8. (B) Continental Shelf, Continental Slope, Continental Rise, Abyssal Plain
Moving away from the coastline toward the deep sea, the ocean floor follows a specific structural sequence. It begins with the shallow continental shelf, followed by the steeply dipping continental slope. The continental rise is a gentle incline of accumulated sediments at the base of the slope. Finally, the terrain levels out into the vast, flat abyssal plains.

9. (B) It contains the warm Antarctic Circumpolar Current.
The Southern Ocean surrounds Antarctica and is defined by the Antarctic Circumpolar Current. This current is a massive cold-water flow that moves eastward around the continent, acting as a barrier that keeps Antarctica frozen. While the ocean connects the Pacific, Atlantic, and Indian

List I: (Forms of Ocean Energy)
P. Ocean Thermal Energy Conversion (OTEC)
Q. Tidal Energy
R. Wave Energy
S. Salinity Gradient Energy
List II: (Generating Mechanism)
I. Utilizing the difference between high and low sea levels
II. Utilizing the temperature difference between surface and deep waters
III. Utilizing the kinetic energy of wind-generated surface movements
IV. Utilizing the osmotic pressure difference between fresh and salt water
(A) P-I, Q-II, R-IV, S-III
(B) P-II, Q-III, R-I, S-IV
(C) P-II, Q-I, R-III, S-IV
(D) P-III, Q-I, R-II, S-IV
(E) Answer not known

125. Which of the following is the most accurate statement regarding Polymetallic Nodules found in the deep ocean?
(A) Floating clumps of organic matter used for the production of sustainable ocean biofuel.
(B) Massive salt deposits formed by rapid evaporation in shallow coastal tropical lagoons.
(C) Artificial structures dropped by ships to map the topography of the deep ocean floor.
(D) Potato-shaped concretions on abyssal plains rich in manganese and other metals.
(E) Answer not known

126. Which of the following pairs of traditional coastal communities in Tamil Nadu and their primary traditional occupation is correctly matched?
(A) Kurumbas are a community specialized in modern deep-sea oil and gas drilling.
(B) Todas are primarily responsible for intensive mangrove afforestation programs.
(C) Parathavars are involved in traditional marine fishing and pearl diving.
(D) Badagas are historically known for their expertise in industrial shipbuilding.
(E) Answer not known

127. The Tamil Nadu coast is considered highly suitable for Ocean Thermal Energy Conversion (OTEC) primarily because:
(A) The coastline experiences some of the highest and most powerful tidal ranges in the world.
(B) A steep drop near the coast provides easy access to deep cold water.
(C) It is frequently hit by high-intensity cyclonic storms that power these specific generators.
(D) The surface waters are artificially and consistently heated by various nuclear power plants.
(E) Answer not known

128. Select the correct logical sequence for the basic operation of a closed-cycle OTEC system:
(A) Warm surface water vaporizes a working fluid → Vapor drives a turbine → Cold deep water condenses the vapor → Cycle repeats
(B) Cold deep water vaporizes a working fluid → Vapor drives a turbine → Warm surface water condenses the vapor → Cycle repeats
(C) Warm surface water is directly pumped into a turbine → It is condensed into ice → Placed into the deep ocean
(D) Solar panels heat the deep water → It rises to drive a turbine → It evaporates into the atmosphere
(E) Answer not known

129. Which of the following is an incorrect statement regarding the ecological concerns at Marina Beach?
(A) The beach ecosystem is entirely sterile and devoid of any intertidal marine life.
(B) High levels of plastic pollution threaten the local marine ecosystem.
(C) Urban runoff and untreated sewage discharge have periodically deteriorated water quality.
(D) Unregulated coastal armoring has completely stopped all natural longshore drift.
(E) Answer not known

130. Consider the following statements about India's Blue Economy Policy framework:
I. It emphasizes the sustainable use of ocean resources for economic growth.
II. It integrates the development of coastal communities with ocean conservation.
III. It aims exclusively to monopolize fishing rights in international waters.

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circulation, volcanic activity, and the overall topography of the seafloor.

20. (D) Accumulated organic sediments make it rich in hydrocarbon reserves.
The continental shelf is geologically significant due to the thick layers of sedimentary rocks that accumulate over millions of years. These sediments often contain organic matter that, under pressure and heat, transforms into petroleum and natural gas. This makes the shelf a primary region for the exploration and extraction of hydrocarbon resources, vital for the global energy supply.

21. (B) 1982
The United Nations Convention on the Law of the Sea, commonly known as UNCLOS, was adopted in 1982. This international agreement established a comprehensive legal framework for all ocean space, including maritime boundaries, environmental protection, and the management of marine resources. It defines the rights and responsibilities of nations regarding their use of the world's diverse oceanic regions.

22. (A) I and II
The Exclusive Economic Zone is a maritime area extending up to 200 nautical miles from a coastal state's baseline. Within this zone, the state has sovereign rights to explore, exploit, and manage natural resources, such as fish and minerals. However, other states still maintain certain freedoms, including the right to lay submarine cables and pipelines through these waters.

23. (C) A is true but R is false.
The contiguous zone is a maritime belt where a coastal state can exercise control to prevent and punish infringements of its customs, fiscal, immigration, or sanitary laws. While this provides specific enforcement powers, it does not grant full sovereignty over the airspace or the seabed. Full sovereignty is restricted to the territorial sea, which lies closer to the land.

24. (A) P-III, Q-I, R-IV, S-II
Ocean currents are specific to their respective basins. The Gulf Stream is a warm current in the North Atlantic. The Kuroshio current flows in the North Pacific. The Agulhas current is a significant feature of the Indian Ocean, while the Benguela current is a cold current located in the South Atlantic. These currents significantly influence regional climates and ecosystems.

25. (B) Warm currents move poleward from the equator, while cold currents flow toward the equator.
Ocean currents are primarily categorized by their temperature relative to the surrounding water. Warm currents originate in the tropical regions near the equator and transport heat toward the poles. Conversely, cold currents originate in higher latitudes or polar regions and flow toward the equator. This global circulation system is essential for distributing thermal energy and regulating the Earth's climate.

26. (B) Humboldt Current - Cold current
The Humboldt Current, also known as the Peru Current, is a major cold current that flows northward along the western coast of South America. It brings nutrient-rich, cold water from the depths to the surface, supporting one of the world's most productive marine ecosystems. This current is distinct from warm currents like the Gulf Stream or the Brazilian Current.

27. (A) The development of arid and desert conditions.
Cold ocean currents along western coasts have a significant cooling and drying effect on the adjacent land. These currents stabilize the atmosphere, preventing the upward movement of air necessary for cloud formation and precipitation. This phenomenon often leads to the creation of coastal deserts, such as the Atacama in South America and the Namib Desert in southwestern Africa.

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28. (C) Territorial Sea, Contiguous Zone, Exclusive Economic Zone, High Seas
Under the 1982 UNCLOS framework, maritime zones are organized by their distance from the coastal baseline. The territorial sea extends up to 12 nautical miles, followed by the contiguous zone up to 24 nautical miles. The Exclusive Economic Zone continues to 200 nautical miles. Beyond these national jurisdictions lie the high seas, which are open to all nations.

29. (D) The current circulation in the North Indian Ocean remains identical throughout the year regardless of seasons.
The North Indian Ocean is unique because its surface circulation is dominated by the seasonal monsoon winds. This causes a complete reversal of current directions between the summer and winter seasons. During the southwest monsoon, currents flow clockwise, while they flow counter-clockwise during the northeast monsoon. Therefore, the circulation is highly seasonal and does not remain constant throughout the year.

30. (B) I, II and IV
Ocean currents are driven by various factors. Surface currents are primarily moved by prevailing winds, while deep ocean currents are driven by density differences caused by temperature and salinity. The shape of coastlines also deflects and directs these flows. In the Northern Hemisphere, the Coriolis effect causes currents to deflect to the right, rather than the left.

31. (C) A is true but R is false.
The Agulhas Current is a powerful, warm ocean current that flows southward along the eastern coast of Africa. It originates in the tropical regions of the Indian Ocean, carrying warm water toward the higher latitudes. It does not originate near Antarctica; instead, it is a western boundary current that plays a crucial role in global heat transport.

32. (D) P-III, Q-I, R-II, S-IV
The Indian Ocean features diverse current systems. The South Equatorial Current flows westward near the equator. The Mozambique Current is a warm flow between Madagascar and Africa. The West Australian Current is a cold current moving northward along Australia's coast. The Somali Current is distinctive because it reverses its direction seasonally in response to the changing monsoon winds.

33. (A) Marine areas not included in the EEZ, territorial sea, or internal waters.
The high seas are defined under international law as the parts of the ocean that are not included in the exclusive economic zone, the territorial sea, or the internal waters of any state. These areas are beyond national jurisdiction and are open to all states for activities such as navigation, overflight, fishing, and scientific research under specific international regulations.

34. (C) California Current - Warm Current
Ocean currents are categorized as warm or cold based on their temperature relative to the waters they enter. The California Current is a cold current that flows southward along the western coast of North America. It brings cooler water from the North Pacific toward the tropics. This is contrasted with warm currents like the Gulf Stream or the Kuroshio current.

35. (A) Thermohaline circulation
Deep-water currents are driven by differences in water density, a process known as thermohaline circulation. Changes in temperature and salinity levels make water more or less dense; cold, salty water sinks and flows along the ocean floor. This global "conveyor belt" is essential for distributing nutrients and regulating climate, operating independently of the surface winds that drive tides.

36. (A) III, II, I, IV
The North Atlantic Gyre is a large system of circular ocean currents. It begins with the North Equatorial Current near the equator, which flows into the Gulf Stream along the American coast. This then becomes the North Atlantic Drift as it moves toward Europe. Finally, the Canary Current flows southward along the African coast to complete the clockwise cycle.

37. (B) 2.02 million sq. km
India possesses a vast Exclusive Economic Zone (EEZ) that extends up to 200 nautical miles from its coastlines. This zone covers an estimated area of approximately 2.02 million square kilometers. Within this region, India holds sovereign rights for the exploration and exploitation of all natural resources, including fisheries, minerals, and potential energy sources from the sea.

38. (A) I, II, III and V
The South Equatorial Current in the Indian Ocean is a stable, warm current driven by the Southeast Trade Winds. It flows westward year-round, transporting warm water across the basin. Upon reaching Africa, it splits into the Mozambique and Madagascar currents. Unlike the North Indian Ocean currents, this southern

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current does not completely reverse its direction with the seasons.

39. (D) Gulf Stream
The Gulf Stream is one of the most significant warm ocean currents in the world. It originates in the Gulf of Mexico and flows up the eastern coast of the United States before crossing the Atlantic. By transporting warm equatorial water toward the North Atlantic, it greatly moderates the climate of Western Europe, keeping it warmer than other regions.

40. (A) The seasonal monsoon wind patterns exercise dominant control over these surface currents.
The unique seasonal reversal of surface currents in the North Indian Ocean is a direct consequence of the monsoon system. During the summer, the southwest monsoon winds drive the currents in one direction, while the northeast monsoon winds in winter reverse this flow. This highlights how regional atmospheric patterns can exercise primary control over the movement of surface waters.

41. (B) Spring tides
Spring tides occur when the Sun, Earth, and Moon are aligned in a straight line, which happens during full moon and new moon phases. This alignment causes the gravitational pulls of the Sun and Moon to combine, resulting in the highest high tides and the lowest low tides. Despite the name, they occur twice every month throughout the entire year.

42. (A) I and II
Neap tides occur when the gravitational pulls of the Sun and the Moon are at right angles to each other relative to the Earth. This happens during the first and third quarter phases of the moon. Because these forces partially cancel each other out, neap tides result in a smaller tidal range, with lower high tides and higher low tides.

43. (B) Both A and R are true but R is not the correct explanation of A.
In the deep ocean, tsunamis possess extremely long wavelengths and very low amplitudes, making them nearly indistinguishable from regular waves on the surface. These waves travel at high speeds, often comparable to jet aircraft, due to the great water depth. While both facts are scientifically accurate, the high speed does not directly explain why the waves are unnoticeable.

44. (C) P-III, Q-I, R-IV, S-II
Ocean waves are described using specific terminology. The crest is the highest point of the wave, while the trough is the lowest point. The vertical distance between these two points is defined as the wave height. The horizontal distance between two successive crests or troughs is the wavelength, which determines how much energy the wave carries across the water.

45. (D) Constructive waves have a strong swash and weak backwash, depositing sediment on the beach.
Constructive waves are characterized by a powerful forward movement of water, known as the swash, and a weaker retreating movement, called the backwash. This imbalance allows the waves to deposit sand and other sediments onto the shore, gradually building up the beach. These waves typically occur during calm weather and have long wavelengths and low wave heights.

46. (C) Diurnal tide - One high tide and one low tide each day
Tidal patterns are classified by their daily frequency. A diurnal tide consists of only one high tide and one low tide every lunar day. In contrast, semi-diurnal tides feature two high and two low tides of approximately equal height. Mixed tides also have two cycles daily, but the heights of the tides vary significantly between the first and second cycles.

47. (B) Gulf of Kutch
The Gulf of Kutch in Gujarat is identified as one of the most promising locations for tidal energy in India. This region experiences exceptionally high tidal ranges, which provide the necessary mechanical energy to drive turbines. Harnessing this natural rise and fall of sea levels offers a predictable and renewable source of power, contributing to India's clean energy goals.

48. (B) Underwater earthquake → High-speed propagation → Wave shoaling → Coastal inundation
A tsunami typically begins with an underwater earthquake that displaces a large volume of water. This creates waves that propagate at high

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restricts the passage of deep-draft vessels. Consequently, ships traveling between the western and eastern coasts of India or other international destinations must navigate all the way around the island of Sri Lanka.

104. (A) P-IV, Q-III, R-I, S-II
The coastline of Tamil Nadu features several distinct geographical markers. Point Calimere is a prominent headland where the coast turns sharply. Adam's Bridge is a chain of limestone shoals connecting India and Sri Lanka. Palk Bay is the semi-enclosed shallow water body between the two nations, while the Gulf of Mannar is a globally recognized biosphere reserve and marine sanctuary.

105. (B) Dredging a channel through Palk Bay and Adam's Bridge to reduce shipping distances.
The Sethusamudram Ship Channel Project is a proposed maritime development initiative aimed at creating a navigable path between India and Sri Lanka. This involves dredging a channel through the shallow waters of Palk Bay and Adam's Bridge. The primary objective is to significantly reduce the shipping distance and time for vessels traveling between the western and eastern coasts.

106. (B) Olive Ridley turtles nest along the Chennai and Nagapattinam coasts.
Tamil Nadu is an important region for the conservation of several marine species. Olive Ridley turtles are well-known for nesting along the sandy beaches of Chennai and Nagapattinam during the winter months. The state also protects the endangered dugong in the Gulf of Mannar. These conservation efforts are critical for maintaining the health of the marine biodiversity along the southeastern coast.

107. (A) Dredging could disturb fragile marine ecosystems like coral reefs and seagrass beds.
Environmentalists expressed serious concerns regarding the Sethusamudram project due to its potential impact on marine biodiversity. Dredging through the shallow Palk Strait could destroy vital seagrass meadows and coral reefs. These habitats are essential for the survival of many species, including the endangered dugong. Such large-scale physical disturbances could lead to irreversible damage to these fragile and unique marine ecosystems.

108. (A) II, I, IV, III
Moving from north to south between India and Sri Lanka, the marine features follow a specific sequence. It begins with the Palk Strait, which opens into Palk Bay. Further south lies Adam's Bridge, the chain of limestone shoals. Finally, the Gulf of Mannar is located at the southern end of this geographical chain, separating the tip of India from Sri Lanka.

109. (D) The dispute was resolved by ceding Katchatheevu in 1974, stopping all crossings.
The fishing dispute in the Palk Bay remains a complex and ongoing issue. Although India ceded the island of Katchatheevu to Sri Lanka in 1974, this did not end the crossing of the maritime boundary by fishermen. Indian trawlers frequently enter Sri Lankan waters in search of better catches, often leading to arrests and diplomatic tension between the two neighboring nations.

110. (A) I, II and IV
Sea turtle conservation in Tamil Nadu involves several active measures. The Forest Department operates hatcheries to protect Olive Ridley eggs, which are the most common species in the area. Authorities also promote Turtle Excluder Devices in fishing nets to reduce accidental deaths. Crucially, light pollution is discouraged, as artificial lighting can disorient hatchlings and prevent them from reaching the sea.

111. (C) A is true but R is false.
The dugong population in the Gulf of Mannar is indeed highly vulnerable and considered endangered. However, their primary dependence is not on coral reefs for shelter. Instead, dugongs are herbivorous mammals that rely almost exclusively on seagrass meadows for food. The destruction and degradation of these underwater meadows, rather than coral reefs, is the most direct threat to their survival.

112. (D) P-II, Q-III, R-IV, S-I
Specific locations in Tamil Nadu have unique significance. Kurusadai Island is a major site for marine biological research. Dhanushkodi is an abandoned town that was destroyed by a powerful cyclone in 1964. Katchatheevu is an islet at the center of maritime boundary disputes, while the Chennai coast is well-known for being

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and Chennai. This disaster highlighted the urgent need for a dedicated tsunami early warning system in the Indian Ocean region.

58. (A) I, II, IV and V
Following the 2004 tsunami, Tamil Nadu implemented several disaster management strategies. These included planting mangroves and shelter belts to dissipate wave energy and constructing multi-purpose evacuation shelters. Coastal mapping was used to identify safe routes, and regular mock drills were introduced to ensure community preparedness. Far from being dismantled, the early warning system was strengthened to provide continuous monitoring and protection.

59. (A) Mangrove and Casuarina shelter belts
The Tamil Nadu government promotes the use of bio-shields, such as mangroves and Casuarina plantations, to protect its coastline. These natural barriers are effective at absorbing and dissipating the energy of tsunamis and storm surges. Unlike rigid concrete walls, these shelter belts also provide ecological benefits, supporting local biodiversity while stabilizing the shoreline against the ongoing threat of coastal erosion.

60. (C) The solar tide actively cancels out a portion of the lunar tide.
During a neap tide, the Sun and the Moon are positioned at right angles relative to the Earth. In this configuration, the gravitational pull of the Sun works against the gravitational pull of the Moon. As a result, the solar tide partially cancels out the lunar tide, leading to a much smaller tidal range with lower high tides and higher low tides.

61. (C) 35 parts per thousand (ppt)
Salinity refers to the total amount of dissolved salts in seawater, usually expressed in parts per thousand. The average salinity of the global ocean is approximately 35 parts per thousand. This level is maintained by a balance between processes that add fresh water, like rain, and processes that remove it, such as evaporation and the formation of ice.

62. (D) I, II and III
The salinity of surface ocean water is influenced by several environmental factors. Evaporation removes fresh water, increasing the concentration of salt. Conversely, precipitation and the influx of fresh water from rivers decrease salinity by diluting the seawater. The constant interaction between these processes determines the varying salinity levels observed across different regions of the world's vast and diverse oceans.

63. (A) Both A and R are true and R is the correct explanation of A.
Ocean acidification occurs as the oceans absorb increasing amounts of atmospheric carbon dioxide. This chemical reaction lowers the water's pH and reduces the availability of carbonate ions. Many marine organisms, such as corals and mollusks, rely on these ions to build their calcium carbonate shells and skeletons. Consequently, their ability to grow and maintain these structures is severely compromised.

64. (D) P-IV, Q-II, R-I, S-III
Coral reefs are classified based on their structure and relationship to the land. Fringing reefs are directly attached to the shore. Barrier reefs are separated from the mainland by a deep lagoon. Atolls are circular reefs that enclose a central lagoon, often formed around sunken volcanoes. Patch reefs are small, isolated structures typically found growing within the shallow waters of a lagoon.

65. (A) A transition layer where temperature decreases rapidly with increasing depth.
The thermocline is a distinct layer in the ocean where there is a rapid change in temperature with depth. It typically sits below the uniformly warm surface layer and above the consistently cold deep-water layer. This transition zone is crucial for marine life and ocean circulation, as it acts as a barrier that limits the mixing of nutrients and heat between layers.

66. (C) Gulf of Mannar - Tamil Nadu Coast
India has several major coral reef regions. The Gulf of Mannar is located along the southeastern coast of Tamil Nadu. Lakshadweep is an archipelago in the Arabian Sea, while the Andaman and Nicobar Islands are situated in the Bay of Bengal. The Gulf of Kutch is on the west coast in Gujarat. These regions support highly diverse and productive marine ecosystems.

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85. (B) Ecologically sensitive areas like mangroves and corals where construction is prohibited.
Under the Coastal Regulation Zone (CRZ) Notification of 2019, CRZ-I areas are designated as ecologically sensitive. These regions include vital ecosystems like mangroves, coral reefs, and sand dunes. To protect these fragile environments from degradation, most construction and industrial activities are strictly prohibited within these zones. This classification is essential for maintaining coastal biodiversity and protecting the natural barriers that guard against erosion.

86. (C) CRZ-I - Ecologically Sensitive Areas
The Coastal Regulation Zone (CRZ) system classifies coastal areas to manage development and conservation. CRZ-I encompasses ecologically sensitive areas that require the highest level of protection. CRZ-II includes developed urban areas, while CRZ-III covers relatively undisturbed rural areas. CRZ-IV specifically refers to the water area from the low tide line toward the sea, ensuring comprehensive management of all coastal environments.

87. (D) Sand-filled synthetic fabric bags used to absorb wave energy and stabilize the shoreline.
Geobags are a modern, flexible engineering solution used to combat coastal erosion. These large bags are made from durable synthetic fabric and filled with sand or soil. When placed along vulnerable shorelines, they act as a buffer that absorbs wave energy and prevents the loss of beach material. They are often preferred over rigid concrete structures as they are more environmentally friendly.

88. (B) Gujarat Coast, Konkan Coast, Malabar Coast
Moving from north to south along the Western Coast of India, the divisions follow a specific geographical sequence. It starts with the Gujarat Coast in the north. Following this is the Konkan Coast, which covers the maritime areas of Maharashtra and Goa. Finally, the Malabar Coast forms the southern part of the western coastline, primarily running along the state of Kerala.

89. (B) It has steep, rugged cliffs directly facing the sea with no coastal plains.
The Coromandel Coast, located along the southeastern side of India, is characterized by broad coastal plains and significant river deltas. It is not a rugged cliff-lined coast. This region is particularly known for receiving heavy rainfall during the retreating northeast monsoon. Historically, these plains have supported major agricultural activities and the development of numerous important ports and trading centers.

90. (A) I, II and III
Coastal erosion in India is driven by both natural and human-induced factors. Rising sea levels due to climate change and the destruction of natural barriers like mangroves increase the vulnerability of the shoreline. Additionally, dams on rivers reduce the amount of sediment reaching the coast, preventing the natural replenishment of beaches. Together, these factors lead to the significant loss of coastal land.

91. (C) A is true but R is false.
The western coastline of India is relatively straight and lacks the deep indentations found in many other maritime regions. However, this is not because it is a wide emergent coast. In fact, the western continental shelf is relatively narrow in the south. The straightness is largely due to the geological history of the Deccan Trap and the faulting that occurred during Gondwanaland's breakup.

92. (C) P-II, Q-I, R-IV, S-III
Specific coastal features are associated with different parts of India's shoreline. Kayals, or backwaters, are a famous characteristic of the Malabar Coast in Kerala. The Gulf of Kutch is a prominent feature of the Gujarat Coast. Chilika Lake is a large brackish water lagoon in Odisha, while the Gulf of Mannar is located off the coast of Tamil Nadu.

93. (D) A coastline with a smooth outline without significant indentations.
In coastal geography, a "straight coastline" refers to a shoreline that lacks significant indentations such as deep bays, gulfs, or estuaries. It presents a smooth and relatively uniform outline to the sea. This type of coastline is often the result of geological faulting or long-term sediment deposition and erosion processes that have leveled out any original irregularities in the land's edge.

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76. (A) II, I, III
The ocean water column is vertically stratified by temperature. The uppermost layer is the epipelagic mixed layer, which is warmed by the sun. Below this lies the thermocline, where the temperature drops rapidly with depth. The deepest part is the deep cold-water layer, where temperatures remain consistently low and uniform. This stratification significantly influences the movement of nutrients and organisms.

77. (D) Ganga and Brahmaputra
The Sundarbans is the world's largest contiguous mangrove forest, located within the vast delta formed by the confluence of the Ganga and Brahmaputra rivers. This unique ecosystem spans across India and Bangladesh. It is renowned for its complex network of tidal waterways, mudflats, and diverse wildlife, including the Royal Bengal Tiger, making it a globally significant ecological and conservation area.

78. (A) I, II, III and IV
Mangroves provide numerous ecological benefits, including acting as nurseries for fish and stabilizing coastlines against erosion. They also improve water quality by filtering pollutants and provide a natural shield against storm surges and tsunamis. However, they do not increase the salinity of groundwater; in fact, they can help protect coastal aquifers from saltwater intrusion by maintaining a healthy ecological balance.

79. (B) A network of 21 islands harboring both fringing coral reefs and seagrass beds.
The Gulf of Mannar Marine National Park is uniquely biodiverse due to its complex of 21 islands. These islands support a variety of ecosystems, including extensive fringing coral reefs and healthy seagrass beds. This combination of habitats provides essential food and shelter for thousands of marine species, including the endangered dugong, and was a primary reason for its declaration as a protected area.

80. (D) They will face difficulty maintaining calcium carbonate structures, reducing growth rates.
Ocean acidification reduces the concentration of carbonate ions, which are the building blocks used by calcifying organisms like corals and mollusks. As seawater becomes more acidic, these organisms must expend more energy to build and maintain their shells and skeletons. This often results in slower growth rates, weaker structures, and increased vulnerability to predators and physical damage, threatening their long-term survival.

81. (C) 7516.6 km
India has an extensive coastline that includes the mainland and its various island groups. The total length of this coastline is approximately 7516.6 kilometers. This vast maritime border is divided between the mainland's 5422.6 kilometers and the 2094 kilometers belonging to the island territories. This extensive coastline is vital for India's economy, trade, and the management of its marine resources.

82. (C) I and III
The West coast of India is characterized by a narrow coastal plain situated between the Arabian Sea and the Western Ghats. It features numerous estuaries, backwaters, and lagoons, particularly in Kerala. Unlike the East coast, the West coast does not have extensive delta formations because the rivers flowing westward are shorter and have a much steeper gradient, preventing significant sediment accumulation.

83. (A) Both A and R are true and R is the correct explanation of A.
The East coast of India is renowned for its large and fertile river deltas. Major rivers like the Mahanadi, Godavari, Krishna, and Cauveri flow eastward across the peninsula, carrying immense loads of sediment. As these rivers reach the broad and shallow continental shelf of the Bay of Bengal, they deposit these sediments, leading to the continuous growth and formation of extensive deltas.

84. (D) P-III, Q-I, R-II, S-IV
The Indian coastline is divided into several distinct regions. The Konkan Coast is located in Maharashtra, while the Malabar Coast refers to the Kerala coastline. The Coromandel Coast stretches along Tamil Nadu. The Northern Circars covers the coastal areas of Andhra Pradesh and Odisha. Each of these regions possesses unique geographical, climatic, and ecological characteristics that define their coastal environments.

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67. (A) By acting as efficient carbon sinks, sequestering blue carbon in biomass and soils.
Mangroves play a vital role in climate change mitigation by acting as powerful carbon sinks. They capture atmospheric carbon dioxide and store it in their extensive biomass and deep, anaerobic soils. This stored carbon, often called "blue carbon," can remain sequestered for centuries. Their ability to store more carbon per unit area than terrestrial forests makes them essential for global environmental health.

68. (C) Moderate at the equator, highest in subtropics, and lowest at the poles.
Ocean surface salinity varies with latitude. At the equator, heavy rainfall dilutes the water, resulting in moderate salinity. In the subtropics, high evaporation and low rainfall lead to the highest salinity levels. Near the poles, salinity is lowest due to the melting of ice and low evaporation. This pattern reflects the global balance of the water cycle across different climatic zones.

69. (B) Bleached corals are completely dead and cannot recover under any circumstances.
Coral bleaching occurs when environmental stress causes corals to expel their symbiotic zooxanthellae algae, leaving the white skeleton visible. While bleaching leaves corals vulnerable and hungry, they are not necessarily dead. If environmental conditions return to normal relatively quickly, the corals can reacquire the algae and recover. However, prolonged stress often leads to high mortality rates in these fragile marine ecosystems.

70. (A) I, II and IV
Seagrass meadows are essential coastal ecosystems composed of underwater flowering plants. They provide food and habitat for many marine species, including the endangered dugong. Furthermore, these meadows are highly efficient at sequestering carbon and help stabilize the seabed, which reduces coastal erosion. They are productive environments that contribute significantly to the overall health and resilience of our shallow marine waters.

71. (A) Both A and R are true and R is the correct explanation of A.
The dugong, also known as the sea cow, is a herbivorous marine mammal that feeds almost exclusively on seagrass. The Gulf of Mannar is home to extensive seagrass meadows, making it one of the most important habitats for this endangered species in India. Protecting these underwater meadows is essential for the survival and conservation of the remaining dugong populations in the region.

72. (A) P-II, Q-IV, R-I, S-III
India features several prominent mangrove regions. The Sundarbans are located in West Bengal, while Pichavaram is in Tamil Nadu. Bhitarkanika is a significant mangrove forest in Odisha, and Coringa is found in Andhra Pradesh. These ecosystems are vital for coastal protection, supporting diverse wildlife, and providing livelihoods for local communities through their rich biological productivity and natural resources.

73. (B) The ongoing decrease in ocean pH caused by the uptake of anthropogenic CO_2.
Ocean acidification is a direct consequence of the ocean absorbing large amounts of carbon dioxide released by human activities. When CO_2 dissolves in seawater, it forms carbonic acid, which lowers the pH of the water. This chemical change makes the ocean more acidic, posing a significant threat to marine life, particularly those organisms that build calcium carbonate shells or skeletons.

74. (B) Introduction of invasive species - Enhanced native biodiversity and resilience
Invasive species pose a major threat to marine biodiversity by outcompeting native species for food and habitat. Rather than enhancing resilience, they often disrupt local food webs and cause the decline of indigenous populations. Other significant threats include overfishing, nutrient pollution leading to dead zones, and the habitat destruction caused by activities like deep-sea mining on the ocean floor.

75. (A) Atolls
The islands of Lakshadweep are primarily composed of atolls, which are circular or horseshoe-shaped coral reefs that surround a central lagoon. These atolls formed over millions of years around the tops of submerged volcanic mountains. This unique geological structure provides a sheltered habitat for a wide variety of marine life and defines the geography of this Arabian Sea archipelago.

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94. (C) Kutch - Odisha
Various coastal erosion hotspots are located across India's maritime states. Valiyathura is a well-known site in Kerala, while Royapuram is a vulnerable area in North Chennai, Tamil Nadu. Sagar Island in West Bengal also faces significant erosion challenges. However, Kutch is located in Gujarat on the west coast, not in Odisha, which lies on India's eastern seaboard.

95. (B) Deltaic coast
A deltaic coast is characterized by the dominance of river-borne sediment deposition over the erosive forces of the sea. As rivers discharge large volumes of silt and sand at their mouths, the shoreline gradually builds outward into the ocean, a process known as progradation. This creates a fertile and dynamic environment that is distinct from submergent or fault-driven coastal formations.

96. (A) II, IV, III, I
The major deltas along India's East Coast follow a clear north-to-south geographical order. The Mahanadi Delta is the northernmost among these. Moving south, one encounters the Godavari Delta, followed by the Krishna Delta. Finally, the Cauveri Delta is located at the southern end of this sequence in Tamil Nadu. Each delta is a highly productive agricultural and ecological region.

97. (A) Gujarat
Gujarat has the longest mainland coastline of any Indian state, measuring over 1,600 kilometers. This coastline is significantly indented with numerous gulfs and creeks, providing many excellent locations for natural harbors. This geographical advantage has historically made Gujarat a leader in maritime trade and port-based industries, contributing significantly to both the regional and national economies of India.

98. (A) I, II, IV and V
The 2019 CRZ Notification balances coastal conservation with sustainable development. It allows for certain project clearances at the state level and promotes eco-tourism in specific zones. Importantly, it does not ban traditional fishing, which is considered a vital livelihood. The notification was issued under the Environment (Protection) Act of 1986 to ensure a robust legal framework for coastal management.

99. (A) Kayals
The Malabar Coast in Kerala is famous for its unique "kayals," which are a network of brackish lagoons and lakes. These water bodies run parallel to the Arabian Sea and are connected by both natural and man-made canals. They play a vital role in the local economy, supporting fishing, transportation, and a thriving tourism industry centered around houseboat cruises.

100. (D) It intercepts the retreating Northeast Monsoon winds, receiving winter precipitation.
The Coromandel Coast has a unique rainfall pattern due to its geographical orientation. While most of India receives rainfall during the southwest monsoon, this coast remains relatively dry during that period. Instead, it receives the bulk of its annual precipitation from the retreating northeast monsoon winds between October and December, making winter the primary rainy season for this southeastern region.

101. (C) 1076 km
Tamil Nadu possesses a significant coastline that stretches approximately 1076 kilometers along the Bay of Bengal, the Indian Ocean, and the Arabian Sea. This makes it one of the states with the longest coastlines in India. This extensive maritime border supports diverse ecosystems, including coral reefs and mangroves, and is essential for the state's fishing, trade, and tourism sectors.

102. (A) I and II
The Gulf of Mannar Marine National Park is situated between India and Sri Lanka. It encompasses a chain of 21 small islands surrounded by shallow water. This region is renowned for its incredible biodiversity, particularly its extensive fringing coral reefs and seagrass meadows. It is one of the richest marine biological areas in the world and serves as a vital conservation zone.

103. (D) A is false but R is true.
The Palk Strait is not a major international shipping route for large tankers because it is extremely shallow. The presence of Adam's Bridge, a chain of limestone shoals, further

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the Bay of Bengal. It is widely recognized as the longest natural urban beach in India and the second longest globally. Its vast sandy expanse and historical significance make it a primary cultural and recreational hub for the residents of Chennai and a major attraction for visitors.

122. (A) I and II
India's "Blue Economy" vision focuses on the sustainable development of ocean resources. Key components include harnessing renewable energy from the ocean and exploring deep-sea mining for minerals like polymetallic nodules. Unlike unsustainable and unregulated fishing practices, which the policy seeks to curb, these activities are aimed at driving economic growth while ensuring the long-term health and resilience of the marine ecosystem.

123. (A) Both A and R are true and R is the correct explanation of A.
The National Institute of Ocean Technology in Chennai is a premier research organization dedicated to developing marine technologies. A major part of its mission is to create advanced systems for deep-sea mining. Specifically, it works on the technical challenges of harvesting polymetallic nodules from the abyssal plains of the Central Indian Ocean Basin, supporting India's strategic and economic interests in the deep sea.

124. (C) P-II, Q-I, R-III, S-IV
Ocean energy can be harvested in several ways. Ocean Thermal Energy Conversion uses temperature differences between surface and deep waters. Tidal energy relies on the rise and fall of sea levels. Wave energy captures the kinetic power of surface water movements. Salinity gradient energy utilizes the osmotic pressure difference between fresh and salt water, offering a diverse range of renewable power.

125. (D) Potato-shaped concretions on abyssal plains rich in manganese and other metals.
Polymetallic nodules are small, potato-shaped mineral concretions found on the deep ocean floor, particularly on abyssal plains. These nodules are formed over millions of years through the slow precipitation of metals from seawater. They are highly valued because they contain significant concentrations of manganese, iron, nickel, cobalt, and copper, making them a primary target for future mining.

126. (C) Parathavars are involved in traditional marine fishing and pearl diving.
The Parathavar community has a long and storied history along the southern coast of Tamil Nadu, particularly in the Gulf of Mannar region. They are traditionally known for their expertise in marine fishing and were historically famous for their role in the region's productive pearl diving industry. This community's traditional knowledge and practices remain deeply intertwined with the marine environment.

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127. (B) A steep drop near the coast provides easy access to deep cold water.
Ocean Thermal Energy Conversion requires a significant temperature difference between warm surface water and cold deep water. The Tamil Nadu coast is suitable for this technology because the continental shelf drops off steeply relatively close to the shore. This provides efficient and cost-effective access to the necessary cold water from the depths, which is essential for the operation of OTEC power plants.

128. (A) Warm surface water vaporizes a working fluid → Vapor drives a turbine → Cold deep water condenses the vapor → Cycle repeats
A closed-cycle OTEC system operates by using the temperature difference between ocean layers. Warm surface water is used to heat and vaporize a working fluid with a low boiling point, such as ammonia. The resulting vapor expands to drive a turbine, generating electricity. Finally, cold water pumped from the deep ocean condenses the vapor back into a liquid, allowing the cycle to begin again.

129. (A) The beach ecosystem is entirely sterile and devoid of any intertidal marine life.
Marina Beach supports a variety of intertidal marine life and is an important ecological zone. However, it faces significant environmental challenges, including plastic pollution and untreated urban runoff that degrade water quality. While human activities and coastal structures have impacted the natural dynamics of the beach, the ecosystem is not sterile. Efforts are ongoing to address these pollution issues and protect the local environment.

a significant nesting ground for Olive Ridley turtles.

113. (A) An area for conservation of biodiversity balanced with sustainable human use.
The designation of the Gulf of Mannar as a "Biosphere Reserve" means it is an area recognized under UNESCO's Man and the Biosphere program. It is managed to conserve its unique marine biodiversity while also allowing for sustainable economic activities by local communities. This approach aims to protect fragile ecosystems like coral reefs and seagrass beds while supporting traditional livelihoods like fishing.

114. (C) Tirunelveli is located north of Chennai on the Coromandel coast.
Tamil Nadu's coastal districts are spread across its long shoreline. Kanyakumari is unique as it meets three major bodies of water. Ramanathapuram is strategically located between Palk Bay and the Gulf of Mannar. Nagapattinam was severely affected by the 2004 tsunami. However, Tirunelveli is located in the southern part of the state, far south of Chennai and the northern Coromandel coast.

115. (A) Herbivorous grazers
Dugongs are unique marine mammals that are strictly herbivorous grazers. They spend most of their time feeding on seagrass in shallow coastal waters. Because they rely on these specific plants for their entire diet, they are often referred to as "sea cows." Their specialized feeding habits make them highly dependent on the health and extent of underwater seagrass meadows for survival.

116. (A) I, II, III, IV
Moving from north to south along the Tamil Nadu coastline, one passes through several major landmarks. The sequence begins with Marina Beach in Chennai. Further south is Point Calimere, followed by Pamban Island near Rameswaram. Finally, the journey ends at Cape Comorin in Kanyakumari, which is the southernmost tip of mainland India where the Bay of Bengal, Arabian Sea, and Indian Ocean meet.

117. (B) 21
The Gulf of Mannar Marine National Park consists of 21 small, uninhabited islands. These islands are grouped into different clusters and are surrounded by shallow waters that harbor rich coral reefs and seagrass meadows. This collection of islands forms the core protected area of the larger biosphere reserve, providing a safe haven for thousands of marine species and diverse underwater habitats.

118. (A) I, II, IV and V
The Palk Bay fishing dispute involves several factors, including the 1970s maritime boundary demarcation and the use of mechanized trawlers by Indian fishermen. Frequent diplomatic meetings are held to address the issue of arrests. While Sri Lanka has banned destructive bottom trawling to protect its marine environment, fishing activities have not stopped completely; rather, they remain a point of ongoing regional conflict.

119. (D) A is chain of limestone shoals connecting Pamban Island to Mannar Island.
Adam's Bridge, also known as Rama Setu, is a unique geographical feature consisting of a chain of limestone shoals. These shoals stretch across the shallow sea between Pamban Island in India and Mannar Island in Sri Lanka. This natural formation is approximately 48 kilometers long and significantly affects the navigation and water flow between the Palk Strait and the Gulf of Mannar.

120. (A) Shallow waters facilitated historical cultural and economic ties with northern Sri Lanka.
The geographical proximity and shallow nature of the Palk Bay have historically encouraged strong socio-cultural and economic interactions between the coastal communities of southern India and northern Sri Lanka. For centuries, these waters were easily navigable by small traditional boats, allowing for the exchange of goods, ideas, and people. This shared history has created deep-rooted cultural ties that persist despite modern political boundaries.

121. (B) The longest natural urban beach in India and the second longest in the world.
Marina Beach in Chennai is a major landmark, stretching for approximately 13 kilometers along

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speeds across the deep ocean. As these waves enter shallower coastal waters, they undergo shoaling, where their speed decreases and their height increases dramatically. Finally, the massive waves reach the shore, causing severe coastal inundation and damage.

49. (A) The tsunami warning system in the Indian Ocean successfully alerted all coastal communities hours before the impact.
In 2004, the Indian Ocean lacked an effective tsunami early warning system, leaving many coastal communities unaware of the approaching danger after the earthquake off Sumatra. The disaster caused massive destruction in districts like Nagapattinam in Tamil Nadu. Following this event, the Indian National Centre for Ocean Information Services established a robust warning system to prevent such catastrophic losses in the future.

50. (A) I, II and III
The size and energy of wind-generated ocean waves depend on three primary factors. These include the speed of the wind, the duration for which it blows, and the fetch, which is the distance of open water over which the wind travels. While water salinity can affect density, it does not play a significant role in determining the physical dimensions of waves.

51. (A) Both A and R are true and R is the correct explanation of A.
When a tsunami moves from the deep ocean into shallow coastal waters, its behavior changes significantly. Friction with the seabed slows the front of the wave, causing the following water to pile up. This process, known as shoaling, compresses the wave's energy and causes the wave height to increase dramatically, often reaching several meters before it strikes the shoreline.

52. (D) P-II, Q-IV, R-I, S-III
Different regions along the Indian coastline exhibit unique tidal characteristics. The Gulf of Khambhat in Gujarat and the Sundarbans in West Bengal are known for their high tidal ranges. The Gulf of Mannar and Palk Bay, located along the southern and eastern coasts of Tamil Nadu, feature distinct tidal environments that influence local marine ecology and traditional fishing practices.

53. (B) A tidal cycle with two high tides and two low tides of unequal heights daily.
A mixed tidal pattern is characterized by having two high tides and two low tides each day, but with significant differences in their heights. This means that one high tide is substantially higher than the other, and one low tide is lower than the other. This complexity is common along many coastlines and is influenced by the local seafloor topography.

54. (C) Fetch - The depth of the ocean floor where the wave originates
In wave mechanics, the term "fetch" refers to the distance of open water over which the wind blows in a constant direction. It is not related to the depth of the ocean floor. A longer fetch allows the wind to transfer more energy to the water, resulting in larger waves. Other terms like swash, backwash, and frequency describe wave movement and timing.

55. (D) Semi-diurnal
The Bay of Bengal along India's eastern coast predominantly experiences semi-diurnal tides. This means that most locations in this region observe two high tides and two low tides of approximately equal height every lunar day. This regular tidal rhythm is a critical factor for navigation, port operations, and the ecological processes within the diverse coastal habitats of the region.

56. (A) I, II, III, IV
An effective tsunami warning system follows a logical chronological order. First, seismic sensors detect an underwater earthquake. Next, sea-level gauges verify if a tsunami has actually been generated. Once confirmed, authorities disseminate warnings to vulnerable coastal areas. Finally, the community must respond by following established evacuation procedures to ensure safety before the waves reach the shore and cause damage.

57. (B) 26 December 2004
The 2004 Indian Ocean Tsunami struck the coast of Tamil Nadu on December 26. This catastrophic event was triggered by a massive undersea earthquake near Sumatra, Indonesia. It caused unprecedented loss of life and property across several coastal districts, including Nagapattinam

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130. (A) I, II and IV
The Blue Economy Policy emphasizes the sustainable use of oceanic resources to drive economic growth while ensuring ecosystem health. It seeks to integrate coastal community development with conservation and promotes sectors like marine biotechnology and coastal tourism. Rather than monopolizing international waters, the policy focuses on responsible management and the sustainable exploitation of resources within national and international regulatory frameworks.

131. (C) A is true but R is false.
India has received exclusive rights from the International Seabed Authority to explore for polymetallic nodules in a designated area of the Central Indian Ocean Basin. However, these resources are not found within India's 200 nautical mile Exclusive Economic Zone. Instead, they are located in the "Area," which refers to the seabed beyond national jurisdiction, managed by the international community.

132. (D) P-II, Q-I, R-III, S-IV
India's ocean research is conducted by several specialized institutions. The National Institute of Ocean Technology is based in Chennai, and the Indian National Centre for Ocean Information Services is in Hyderabad. The National Institute of Oceanography is located at Dona Paula, Goa. The National Centre for Polar and Ocean Research, which manages Antarctic and Arctic missions, is in Vasco da Gama, Goa.

133. (B) The sustainable use of ocean resources for growth while preserving ecosystem health.
The Blue Economy is an economic concept that advocates for the sustainable use of ocean resources for economic growth, improved livelihoods, and jobs. Crucially, it emphasizes maintaining the health of the ocean ecosystem. It involves various sectors, including fisheries, renewable energy, maritime transport, and tourism, all managed in a way that ensures the long-term viability of the marine environment.

134. (C) Bio-shields - Chemical sprays used to kill invasive marine weeds
In coastal management, bio-shields refer to natural barriers like mangroves and shelter belts that protect the shore from erosion and storm surges. They are not chemical sprays. Other common structures include groynes, which are built perpendicular to the coast to trap sand, and seawalls, which run parallel to the shore. These measures, along with CRZ regulations, are used to manage coastal dynamics.

135. (D) Coastal placer deposits like ilmenite and garnet.
Deep-sea mining specifically targets mineral resources located in the deep ocean, such as polymetallic nodules on abyssal plains, massive sulphides at hydrothermal vents, and cobalt-rich crusts on seamounts. Coastal placer deposits, like ilmenite and garnet, are found in shallow beach sands and are extracted through different coastal mining processes rather than the specialized technology required for the deep seabed.

136. (A) III, I, II, IV
Coastal disaster risk management follows a continuous cycle to protect communities. It begins with mitigation and prevention to reduce potential impacts. This is followed by preparedness and early warning systems to alert people of immediate threats. After an event, relief and response efforts provide urgent aid. Finally, recovery and reconstruction phases help communities rebuild and improve their resilience for future disasters.

137. (B) Ministry of Earth Sciences
The National Institute of Ocean Technology was established in 1993 to develop indigenous technologies for the sustainable use of ocean resources. It operates under the Ministry of Earth Sciences. The institute focuses on diverse areas, including deep-sea mining, ocean energy, and underwater robotics, playing a vital role in India's scientific and technological advancement in the maritime domain.

138. (A) I, II, IV and V
Coastal livelihoods in Tamil Nadu are diverse, with the fisheries sector being a major economic contributor. Traditional fishermen often face challenges from mechanized trawlers, and women play essential roles in fish processing and sales. Emerging activities like seaweed cultivation provide new opportunities. However, these livelihoods are highly vulnerable to the

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(C) P-III, Q-IV, R-I, S-II
(D) P-I, Q-II, R-III, S-IV
(E) Answer not known

7. The Delta zone of Tamil Nadu is best defined by which of the following geographical features?
(A) An arid region characterized by frequent droughts and fireworks manufacturing.
(B) A continuous mountain range forming the western border with various hill stations.
(C) A coastal stretch known primarily for beach sand minerals and thermal energy plants.
(D) A fertile Cauvery distributary tract including Thanjavur and Tiruvarur.
(E) Answer not known

8. Select the correct order of districts through which the Noyyal river flows before joining the Cauvery river.
(A) Coimbatore, Tiruppur, Erode
(B) Erode, Coimbatore, Tiruppur
(C) Tiruppur, Erode, Coimbatore
(D) Coimbatore, Erode, Tiruppur
(E) Answer not known

9. Which of the following districts is NOT officially designated as a Smart City in Tamil Nadu?
(A) Coimbatore
(B) Kallakurichi
(C) Madurai
(D) Vellore
(E) Answer not known

10. Read the following statements regarding the Western Tamil Nadu zone:
I. Coimbatore is known as a major textile hub situated near the Nilgiris.
II. Tiruppur is recognized globally for its knitwear trade.
III. Erode is situated at the confluence of the Bhavani river and is famous for turmeric.
IV. Salem is known as the steel city but lacks any major dams in its proximity.
Which of the above statements is/are incorrect?
(A) I, II and III
(B) II, III and IV
(C) I and III
(D) IV only
(E) Answer not known

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11. Which distinguishing feature characterizes the Namakkal district in the Western Tamil Nadu zone?
(A) It is a major transport hub and the poultry capital of Tamil Nadu.
(B) It is a coastal district known for its port facilities.
(C) It is entirely covered by the Shevaroy Hills.
(D) It is the primary origin point of the Periyar river.
(E) Answer not known

12. Which of the following pairs is correctly matched regarding Southern Tamil Nadu?
(A) Dindigul - Fireworks and printing capital
(B) Virudhunagar - Locks and knives industry
(C) Theni - Periyar river origin and horticulture
(D) Ramanathapuram - Courtallam falls and gateway to Kerala
(E) Answer not known

13. How does the geographical condition of Sivakasi directly influence its industrial specialization?
(A) Abundant perennial rivers support heavy chemical manufacturing units.
(B) Dense forest cover provides essential raw material for the timber trade.
(C) Coastal proximity allows for development of large-scale shipbuilding.
(D) Dry, arid climate facilitates fireworks and printing industries.
(E) Answer not known

14. Based on the following assertion and reason, choose the correct answer:
Assertion (A): Thoothukudi district is considered a crucial industrial and economic hub in Southern Tamil Nadu.
Reason (R): It is a port city that hosts major thermal power plants and processes beach sand minerals.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

15. Which of the following is the most appropriate description of Tenkasi district?

CHAPTER 14

Regional Geography of Tamil Nadu: Districts, Zones and Landmarks

1. In 2022, the number of districts in Tamil Nadu increased from 32 to 38. Which of the following is not one of the newly formed districts during this reorganisation?
(A) Erode
(B) Ranipet
(C) Kallakurichi
(D) Tenkasi
(E) Answer not known

2. Read the following statements regarding the new districts of Tamil Nadu formed by 2022:
I. Mayiladuthurai was carved out to form a new district in the pearl-rich Cauvery delta region.
II. Chengalpattu was created due to its proximity to Chennai and its growing IT corridor.
III. Tirupathur was formed by bifurcating the Salem district.
Which of the above statements is/are correct?
(A) I and II
(B) II and III
(C) I and III
(D) I only
(E) Answer not known

3. What is the primary administrative significance of a Revenue Division in the structure of Tamil Nadu?
(A) It acts as the intermediary unit between the district and taluks for revenue matters.
(B) It functions exclusively as a specialized judicial district for handling civil litigations.
(C) It represents the smallest possible unit of village-level administrative management.
(D) It maintains sole responsibility for the oversight and regulation of Special Economic Zones.
(E) Answer not known

4. Based on the following assertion and reason, choose the correct answer:
Assertion (A): Vellore and Ranipet districts are major hubs for the leather industry in Tamil Nadu.
Reason (R): The presence of the Palar river basin provides the necessary water resources for the tanning and processing of leather.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

5. Identify the correct statement regarding the Northern Tamil Nadu zone.
(A) It is primarily identified as the state's main rice-producing "bowl."
(B) It includes sugarcane belts like Villupuram and Kallakurichi.
(C) It represents the southernmost geographical zone bordering Kerala.
(D) It lacks any significant transport connectivity or industrial capacity.
(E) Answer not known

6. Match the items in List I with those in List II:
List I: (Districts)
P. Tiruchirappalli
Q. Thanjavur
R. Nagapattinam
S. Cuddalore
List II: (Significance)
I. Tsunami impact and fishing economy
II. SIPCOT industrial area and Uppanar river
III. Geographical centrality and Rock Fort
IV. Cauvery delta and Brihadeeswarar Temple
(A) P-IV, Q-III, R-II, S-I
(B) P-III, Q-I, R-IV, S-II

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39. The industrial classification of the Western Tamil Nadu zone is overwhelmingly dominated by which of the following sectors?
(A) Heavy chemicals and fertilizers
(B) Beach sand mining and thermal energy
(C) Leather tanning and shoemaking
(D) Textile, knitwear, and power looms
(E) Answer not known

40. Read the following statements regarding the administrative structure of Tamil Nadu:
I. The number of districts increased from 32 to 38 by 2022.
II. Revenue divisions serve as the link between districts and taluks.
III. Villages form the fundamental unit of the revenue administration structure.
IV. Kallakurichi and Ranipet are among the newly created districts.
V. Taluks are larger administrative units than Revenue Divisions.
Which of the above statements is/are correct?
(A) I, II, III and IV
(B) II, III, IV and V
(C) I, III and V
(D) I, II, IV and V
(E) Answer not known

41. What defines the historical background of Tamil Nadu's state formation?
(A) It was formed strictly on religious lines post-independence.
(B) It was reorganised primarily based on linguistic boundaries from the former Madras Presidency.
(C) It was created by merging princely states of Kerala and Karnataka.
(D) It remained unchanged in its boundaries since British colonial rule.
(E) Answer not known

42. Read the following statements regarding the geographical location of temples:
I. Brihadeeswarar Temple is located in the pearl-rich Cauvery delta district of Thanjavur.
II. Meenakshi Temple is situated on the banks of the Vaigai river in Madurai.
III. Ramanathaswamy Temple is located on an island in the Ramanathapuram district.
Which of the above statements is/are correct?
(A) I and II
(B) II and III
(C) I and III
(D) I, II and III
(E) Answer not known

43. Which of the following best describes the significance of the Sirumalai Hills?
(A) They are Dindigul hills with unique flora and geography.
(B) They are known for extensive tea estates and situated in the Nilgiris district.
(C) They host the only solar observatory within the state boundaries of Tamil Nadu.
(D) They represent the primary geographical origin point of the Tamirabarani river.
(E) Answer not known

44. Based on the following assertion and reason, choose the correct answer:
Assertion (A): The Nilgiri Mountain Railway was granted UNESCO World Heritage status.
Reason (R): It represents an engineering marvel built through difficult mountainous terrain, preserving its historical route and operational significance.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

45. Identify the correct statement regarding Yercaud.
(A) It is situated in the Palani Hills of Dindigul district.
(B) It is the highest peak in Tamil Nadu, surpassing Doddabetta.
(C) It is a coastal town in the Central zone famous for its heritage sites.
(D) It is a hill station located in the Shevaroy Hills of Salem district, known for coffee cultivation.
(E) Answer not known

46. Match the items in List I with those in List II:
List I: (Rivers)
P. Palar
Q. Cauvery

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(A) It is the state's largest IT corridor adjacent to the capital city.
(B) A gateway to Kerala famous for the Courtallam falls.
(C) It is the only district where three major marine water bodies meet.
(D) It is the primary northern district for the leather tanning sector.
(E) Answer not known

16. Arrange the following hill stations of Tamil Nadu from North to South geographically:
I. Yelagiri
II. Yercaud
III. Kodaikanal
IV. Ooty
(A) I, II, IV, III
(B) II, I, III, IV
(C) I, IV, II, III
(D) IV, I, II, III
(E) Answer not known

17. Which of the following pairs is incorrectly matched regarding hill stations and their locations?
(A) Kolli Hills - Kanyakumari district
(B) Ooty - Nilgiris district
(C) Kodaikanal - Palani Hills
(D) Yercaud - Shevaroy Hills
(E) Answer not known

18. Match the items in List I with those in List II:
List I: (Temples)
P. Meenakshi Amman Temple
Q. Brihadeeswarar Temple
R. Nataraja Temple
S. Ramanathaswamy Temple
List II: (Locations)
I. Chidambaram
II. Madurai
III. Rameswaram
IV. Thanjavur
(A) P-IV, Q-II, R-III, S-I
(B) P-I, Q-III, R-II, S-IV
(C) P-II, Q-IV, R-I, S-III
(D) P-III, Q-I, R-IV, S-II
(E) Answer not known

19. Mamallapuram, a UNESCO heritage site, is a prominent example of which architectural category?
(A) Pallava rock-cut architecture
(B) Chola brick architecture
(C) Pandya structural temples
(D) Nayak pillared halls
(E) Answer not known

20. Read the following statements regarding Industrial Corridors and SEZs in Tamil Nadu:
I. The Chennai-Bengaluru corridor focuses on enhancing industrial growth in the northern districts.
II. The Chennai-Kanyakumari corridor integrates the eastern coastal and southern districts.
III. Special Economic Zones (SEZs) in Tamil Nadu are geographically concentrated only in the Delta zone.
IV. Information Technology SEZs are prominently located along the Chengalpattu-Chennai belt.
V. Coimbatore and Tiruppur regions host SEZs specifically targeting the textile and knitwear sectors.
Which of the above statements is/are correct?
(A) I, II, IV and V
(B) II, III, IV and V
(C) I, III and V
(D) I, II, III and IV
(E) Answer not known

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21. When comparing the geographical features of the Nilgiris district and the Kanyakumari district, which of the following statements is true?
(A) Both districts are defined by their extensive coastal plain topographies.
(B) Nilgiris has high altitude biodiversity; Kanyakumari has three water bodies.
(C) Both districts serve as the primary centers for steel production in the state.
(D) Kanyakumari has the largest tribal population focused on tea cultivation in India.
(E) Answer not known

22. Read the following statements regarding Ooty:
I. It is located in the Nilgiris district and hosts the Doddabetta peak.
II. It is served by the Nilgiri Mountain Railway, which holds UNESCO World Heritage status.

III. It is situated on the eastern coastline of Tamil Nadu.

Which of the above statements is/are correct?

(A) I and III
(B) I and II
(C) II and III
(D) II only
(E) Answer not known

23. Which of the following features is the least relevant to the geography of Tiruvannamalai district?

(A) Presence of the Arunachala Hill
(B) Religious significance as a pilgrimage centre
(C) Location within the Northern Tamil Nadu zone
(D) Large-scale beach sand mineral extraction
(E) Answer not known

24. Based on the following assertion and reason, choose the correct answer:

Assertion (A): The Noyyal river in the Tiruppur district faces severe environmental challenges.

Reason (R): Effluents from the booming knitwear and textile dyeing industries are often discharged into the river.

(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

25. What can be inferred about the Vaigai river's significance to Madurai?

(A) It serves primarily as a navigational waterway for heavy international cargo.
(B) It shapes the city as its historical and cultural capital.
(C) It forms the largest delta in Tamil Nadu, significantly larger than the Cauvery.
(D) It is the exclusive source of hydroelectric power for all southern coastal zones.
(E) Answer not known

26. Match the items in List I with those in List II:

List I: (Cities)
P. Sivakasi
Q. Salem
R. Tiruppur
S. Erode

List II: (Industrial Sectors)
I. Turmeric and textile weaving
II. Steel manufacturing
III. Fireworks and printing
IV. Knitwear capital

(A) P-IV, Q-III, R-I, S-II
(B) P-III, Q-II, R-IV, S-I
(C) P-II, Q-IV, R-III, S-I
(D) P-I, Q-II, R-III, S-IV
(E) Answer not known

27. What is a key advantage of the Chennai-Kanyakumari Industrial Corridor for the Southern zone districts?

(A) It boosts connectivity and industrial growth in southern regions.
(B) It mandates the relocation of all administrative capitals to the south.
(C) It converts agricultural zones directly into large Special Economic Zones.
(D) It requires moving all established textile industries to Kanyakumari port.
(E) Answer not known

28. Select the correct order of the administrative hierarchy in Tamil Nadu from the largest unit to the smallest.

(A) Revenue Division, District, Taluk, Village
(B) District, Taluk, Revenue Division, Village
(C) District, Revenue Division, Taluk, Village
(D) Revenue Division, Taluk, District, Village
(E) Answer not known

29. The Tamirabarani river is central to the geography and agricultural economy of which district, particularly known for banana cultivation?

(A) Ramanathapuram
(B) Kanyakumari
(C) Dindigul
(D) Tirunelveli
(E) Answer not known

30. Read the following statements regarding Mayiladuthurai district:

I. It is one of the new districts formed in the 2022 reorganisation.
II. It is located in the pearl-rich Cauvery delta region.
III. It holds significant agricultural importance.

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IV. It was formed by bifurcating the western district of Nilgiris.

Which of the above statements is/are incorrect?
(A) I, II and III
(B) II, III and IV
(C) IV only
(D) I and IV
(E) Answer not known

31. Which district in the Southern zone is noted for its proximity to hill stations, horticulture, and being the origin of the Periyar river?
(A) Madurai
(B) Theni
(C) Virudhunagar
(D) Tenkasi
(E) Answer not known

32. Which of the following pairs is correctly matched regarding coastal districts and their features?
(A) Nagapattinam - Uppanar river and SIPCOT
(B) Cuddalore - Tsunami impact and fishing economy
(C) Ramanathapuram - Tsunami impact and SIPCOT
(D) Thoothukudi - Port city and thermal plant
(E) Answer not known

33. Which of the following rivers is not prominently associated with the Central Tamil Nadu zone's geography?
(A) Cauvery
(B) Uppanar
(C) Bhavani
(D) None of the above
(E) Answer not known

34. Based on the following assertion and reason, choose the correct answer:
Assertion (A): Ramanathapuram occupies a strategic coastal location with a significant fisheries economy.
Reason (R): It is an inland district with a dense network of freshwater lakes supporting aquaculture.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

35. Identify the correct statement regarding Kodaikanal.
(A) It features a solar observatory and is located in the Palani Hills.
(B) It is situated in the Shevaroy Hills.
(C) It is a UNESCO World Heritage site known for its mountain railway.
(D) It is primarily famous for large-scale coffee cultivation in the Salem district.
(E) Answer not known

36. Arrange the following districts generally from North to South along the eastern coast of Tamil Nadu:
I. Chengalpattu
II. Cuddalore
III. Nagapattinam
IV. Ramanathapuram
(A) I, II, III, IV
(B) I, III, II, IV
(C) II, I, IV, III
(D) IV, III, II, I
(E) Answer not known

37. Which of the following pairs is incorrectly matched regarding the Smart Cities and their respective geographical zones?
(A) Chennai - Northern Zone
(B) Thanjavur - Western Zone
(C) Coimbatore - Western Zone
(D) Madurai - Southern Zone
(E) Answer not known

38. Match the items in List I with those in List II:
List I: (Geographical Zones)
P. Northern Zone
Q. Central Zone
R. Western Zone
S. Southern Zone
List II: (Districts)
I. Tiruchirappalli
II. Vellore
III. Virudhunagar
IV. Namakkal
(A) P-I, Q-II, R-III, S-IV
(B) P-III, Q-IV, R-I, S-II
(C) P-II, Q-I, R-IV, S-III
(D) P-II, Q-IV, R-I, S-III
(E) Answer not known

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biodiversity hotspot suitable for plantation crops.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

55. Which of the following represents the most relevant feature of Dindigul district's industrial economy?
(A) Leather tanning and processing
(B) Fireworks and safety matches
(C) Beach sand mineral extraction
(D) Locks and knives manufacturing
(E) Answer not known

56. Arrange the following dams/reservoirs of Tamil Nadu roughly from West to East based on their river systems' flow towards the delta:
I. Bhavanisagar Dam
II. Mettur Dam
III. Grand Anicut (Kallanai)
(A) I, II, III
(B) II, I, III
(C) III, II, I
(D) I, III, II
(E) Answer not known

57. Which of the following pairs is incorrectly matched regarding the geographical features of Tamil Nadu?
(A) Doddabetta - Nilgiris district
(B) Arunachala Hill - Tiruchirappalli district
(C) Courtallam falls - Tenkasi district
(D) Palani Hills - Kodaikanal
(E) Answer not known

58. Match the items in List I with those in List II:
List I: (Districts)
P. Namakkal
Q. Tiruppur
R. Sivakasi
S. Erode
List II: (Economic Titles)
I. Turmeric capital
II. Poultry capital
III. Knitwear capital
IV. Printing capital
(A) P-III, Q-II, R-I, S-IV
(B) P-II, Q-III, R-IV, S-I
(C) P-IV, Q-I, R-II, S-III
(D) P-I, Q-IV, R-III, S-II
(E) Answer not known

59. Horsley Hills is often discussed in the context of hill stations near Tamil Nadu. Geographically, which aspect distinguishes it from others listed in the state's administrative boundaries?
(A) It is geographically located in Andhra Pradesh, near the border.
(B) It is located entirely below sea level.
(C) It has no road connectivity.
(D) It is a completely arid desert region.
(E) Answer not known

60. Read the following statements regarding the geographical significance of the Cauvery river:
I. It originates in Tamil Nadu and flows into Karnataka.
II. It shapes the geography of the Central and Delta zones.
III. It is a vital water source for the agricultural economy of Thanjavur and Mayiladuthurai.
IV. The Rock Fort of Tiruchirappalli is situated near its banks.
V. It completely bypasses the Western Tamil Nadu zone.
Which of the above statements is/are incorrect?
(A) I and V
(B) II and III
(C) I, IV and V
(D) III, IV and V
(E) Answer not known

61. In terms of geographical classification, how does the Northern Tamil Nadu zone differ primarily from the Delta zone?
(A) The Northern zone is landlocked; the Delta zone is entirely coastal.
(B) The Northern zone is mountainous; the Delta zone is an arid desert.
(C) The Northern zone includes Kanyakumari; the Delta zone includes Chennai.
(D) Northern zone has Palar and IT; Delta zone has Cauvery and rice.
(E) Answer not known

62. Read the following statements regarding Villupuram and Kallakurichi districts:

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R. Noyyal
S. Vaigai
List II: (Districts)
I. Tiruchirappalli
II. Vellore
III. Madurai
IV. Tiruppur
(A) P-I, Q-II, R-III, S-IV
(B) P-III, Q-IV, R-I, S-II
(C) P-II, Q-I, R-IV, S-III
(D) P-II, Q-IV, R-I, S-III
(E) Answer not known

47. Which of the following concepts applies to the geographical centrality of Tiruchirappalli district?
(A) It suffers extreme coastal erosion due to its location on the Bay of Bengal coast.
(B) It acts as a connecting hub between north, south, east, and west regions.
(C) It is the only district in Tamil Nadu that shares its border with three states.
(D) It remains geographically isolated due to the surrounding continuous mountain ranges.
(E) Answer not known

48. Select the correct sequence of districts a traveler would pass through if traveling directly from Chennai to Kanyakumari along the coastal/eastern corridor.
(A) Chengalpattu, Villupuram, Tirunelveli, Kanyakumari
(B) Villupuram, Chengalpattu, Kanyakumari, Tirunelveli
(C) Tirunelveli, Villupuram, Chengalpattu, Kanyakumari
(D) Chengalpattu, Tirunelveli, Villupuram, Kanyakumari
(E) Answer not known

49. Which of the following is NOT a characteristic of the Mettur Dam?
(A) It is built across the Vaigai river.
(B) It is located in the proximity of Salem district.
(C) It plays a significant role in irrigation for the Cauvery delta.
(D) It contributes to hydroelectric power generation.
(E) Answer not known

50. Read the following statements regarding newly formed districts in 2022:
I. Tenkasi was bifurcated from Tirunelveli.
II. Kallakurichi was bifurcated from Villupuram.
III. Tirupathur was bifurcated from Vellore.
IV. Chengalpattu was bifurcated from Kanchipuram.
Which of the above statements is/are correct?
(A) I, II and III
(B) II, III and IV
(C) I, III and IV
(D) I, II, III and IV
(E) Answer not known

51. The Cauvery Delta region is often referred to as the "rice bowl" of Tamil Nadu. This is an example of identifying regions based on:
(A) Agricultural significance and fertile alluvial geography
(B) Industrial clustering
(C) Administrative revenue divisions
(D) Special Economic Zone demarcations
(E) Answer not known

52. Which of the following pairs is correctly matched regarding smart cities?
(A) Vellore - Central Zone
(B) Tiruppur - Southern Zone
(C) Madurai - Northern Zone
(D) Thanjavur - Delta Zone
(E) Answer not known

53. Which environmental issue is a significant concern for the coastal district of Nagapattinam based on historical events?
(A) Frequent landslides
(B) Vulnerability to tsunamis and coastal cyclones
(C) Severe industrial air pollution from steel plants
(D) Heavy deforestation of tropical rainforests
(E) Answer not known

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54. Based on the following assertion and reason, choose the correct answer:
Assertion (A): The Nilgiris district is noted for its high tribal population and extensive tea estates.
Reason (R): The high altitude and specific climatic conditions of the Nilgiris make it a

impacts of climate change and extreme weather events, which can disrupt communities.

139. (A) It houses memorials celebrating Tamil literature and historical figures.
Marina Beach is a site of immense cultural and historical importance. Along its promenade, it features numerous statues and memorials dedicated to prominent figures in Tamil literature, politics, and history. This makes it more than just a recreational beach; it is a space that celebrates the cultural heritage of the region. It is not a breeding ground for crocodiles or the southernmost tip of India.

140. (C) It holds potential for revenue and jobs if ecological balance is maintained.
The Blue Economy framework offers a strategic pathway for coastal states like Tamil Nadu to enhance economic growth. By focusing on sustainable fisheries, marine biotechnology, and renewable energy, the state can generate substantial revenue and employment. However, achieving these benefits requires a careful balance to ensure that maritime resources are managed responsibly without compromising the health of ecosystems.

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I. They form a major sugarcane belt in the state.
II. Kallakurichi is one of the newly formed districts.
III. They are categorized under the Southern Tamil Nadu zone.
Which of the above statements is/are correct?
(A) I and II
(B) II and III
(C) I and III
(D) I only
(E) Answer not known

63. Which district features the confluence of three major water bodies, making it a unique geographical and tourist landmark?
(A) Ramanathapuram
(B) Kanyakumari
(C) Thoothukudi
(D) Nagapattinam
(E) Answer not known

64. Based on the following assertion and reason, choose the correct answer:
Assertion (A): The leather industry is highly concentrated in the Vellore and Ranipet districts.
Reason (R): These districts fall under the Palar river basin, historically providing water essential for the tanning process.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

65. What is a primary administrative objective for creating new districts like Mayiladuthurai and Kallakurichi?
(A) Decentralizing districts to improve administrative efficiency.
(B) Moving the state capital to a more central southern location.
(C) Creating distinct independent states within the Tamil Nadu region.
(D) Allocating exclusive zones for international military stationing.
(E) Answer not known

66. Match the items in List I with those in List II:
List I: (Locations)
P. Mamallapuram
Q. Ooty
R. Thanjavur
S. Chidambaram
List II: (UNESCO World Heritage connection)
I. Brihadeeswarar Temple
II. Pallava coastal rock-cut architecture
III. Nilgiri Mountain Railway
IV. Nataraja Temple (Heritage site proximity)
(A) P-III, Q-II, R-IV, S-I
(B) P-I, Q-IV, R-II, S-III
(C) P-II, Q-III, R-I, S-IV
(D) P-II, Q-I, R-III, S-IV
(E) Answer not known

67. The development of IT corridors and heritage tourism side-by-side is a distinct advantage for which of the following districts?
(A) Chengalpattu
(B) Theni
(C) Virudhunagar
(D) Erode
(E) Answer not known

68. Select the correct flow sequence of the Cauvery river through the following central/delta districts:
(A) Tiruchirappalli, Thanjavur, Nagapattinam
(B) Thanjavur, Tiruchirappalli, Nagapattinam
(C) Nagapattinam, Thanjavur, Tiruchirappalli
(D) Tiruchirappalli, Nagapattinam, Thanjavur
(E) Answer not known

69. Which of the following statements provides factual information regarding the agricultural significance of Erode district?
(A) It is the highest producer of apples in Tamil Nadu.
(B) It is known globally as the turmeric capital.
(C) It is entirely reliant on dryland farming with no river irrigation.
(D) It is the largest producer of marine fish.
(E) Answer not known

70. Read the following statements regarding Special Economic Zones (SEZs) in Tamil Nadu:
I. They are designed to promote exports and industrial growth.
II. Tiruppur has SEZs focusing on the knitwear and textile sectors.

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103. Which of the following offers the most prominent biodiversity hotspot in Tamil Nadu, characterized by unique flora and a large tribal population?
(A) Chennai coast
(B) Thanjavur delta
(C) Thoothukudi shores
(D) Nilgiris district
(E) Answer not known

104. Based on the following assertion and reason, choose the correct answer:
Assertion (A): The district of Erode has emerged as a major center for textile weaving and power looms.
Reason (R): The availability of water from the Bhavani river confluence supports extensive agricultural and agro-industrial activities.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

105. What can be inferred about the industrial strategy of the Chennai-Bengaluru industrial corridor?
(A) It relies solely on the export of basic agricultural surplus.
(B) It leverages Northern district proximity to IT and ports.
(C) It aims to disconnect the regional economy from nearby states.
(D) It restricts all future industrial growth to the Delta zone.
(E) Answer not known

106. Match the items in List I with those in List II:
List I: (Districts)
P. Tirunelveli
Q. Erode
R. Villupuram
S. Nilgiris
List II: (Agricultural Products)
I. Sugarcane
II. Turmeric
III. Tea
IV. Banana
(A) P-II, Q-IV, R-III, S-I
(B) P-IV, Q-II, R-I, S-III
(C) P-I, Q-III, R-IV, S-II
(D) P-III, Q-I, R-II, S-IV
(E) Answer not known

107. Which of the following represents a significant disadvantage of the rapid industrialization in Tiruppur?
(A) Severe pollution of the Noyyal river due to untreated effluents from dyeing units.
(B) Complete collapse of the local real estate market.
(C) Loss of maritime trade due to port siltation.
(D) Decreased agricultural yield in the Cauvery delta.
(E) Answer not known

108. Select the correct order of the following major rivers from North to South in Tamil Nadu:
(A) Palar, Cauvery, Vaigai, Tamirabarani
(B) Cauvery, Palar, Tamirabarani, Vaigai
(C) Palar, Vaigai, Cauvery, Tamirabarani
(D) Vaigai, Palar, Cauvery, Tamirabarani
(E) Answer not known

109. Which of the following is a factual statement regarding the Kallakurichi district?
(A) It is Tamil Nadu's southernmost district.
(B) It houses the state's largest seaport.
(C) It is a major hill station located in the Western Ghats.
(D) It was formed in 2022 and lies in the sugarcane belt.
(E) Answer not known

110. Read the following statements regarding the coastal geography of Tamil Nadu:
I. Nagapattinam was severely impacted by the 2004 tsunami.
II. Thoothukudi utilizes its coastal geography for beach sand minerals and a port.
III. Ramanathapuram acts as a strategic coastal district with significant fisheries.
IV. Kanyakumari is situated where the Arabian Sea, Indian Ocean, and Bay of Bengal meet.
Which of the above statements is/are correct?
(A) I, II and III
(B) II, III and IV
(C) I, III and IV
(D) I, II, III and IV
(E) Answer not known

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(A) P-IV, Q-III, R-II, S-I
(B) P-I, Q-II, R-III, S-IV
(C) P-III, Q-IV, R-I, S-II
(D) P-III, Q-II, R-IV, S-I
(E) Answer not known

79. The SIPCOT industrial area located along the Uppanar river is a defining economic feature of which district?
(A) Villupuram
(B) Cuddalore
(C) Thanjavur
(D) Kanyakumari
(E) Answer not known

80. Read the following statements regarding the geography and connectivity of Tamil Nadu districts:
I. Namakkal serves as a major transport and logistics hub in the Western zone.
II. The Chennai-Bengaluru industrial corridor passes through the Northern zone districts.
III. Tenkasi district acts as a natural gateway to Kerala due to passes in the Western Ghats.
IV. Ramanathapuram boasts a large thermal power plant utilizing lignite from Neyveli.
V. The Nilgiris district is entirely isolated with no railway connectivity.
Which of the above statements is/are correct?
(A) I, II and III
(B) II, III and IV
(C) I, III and V
(D) I, II, IV and V
(E) Answer not known

81. Which of the following best defines a Taluk in the administrative structure of Tamil Nadu?
(A) A sub-division of a revenue division managing several villages.
(B) A cluster of districts forming a specific larger geographical zone.
(C) A judicial body responsible for resolving inter-state river disputes.
(D) An exclusive zone meant only for the operation of heavy industries.
(E) Answer not known

82. Read the following statements regarding the geographical zones of Tamil Nadu:
I. The Northern zone is noted for the Palar river basin.
II. The Central zone is noted for the Vaigai river.
III. The Delta zone is formed by the fertile Cauvery river.
Which of the above statements is/are correct?
(A) I and II
(B) II and III
(C) I and III
(D) I, II and III
(E) Answer not known

83. Which district is known as the cultural capital of Tamil Nadu and is situated on the banks of the Vaigai river?
(A) Madurai
(B) Tiruchirappalli
(C) Thanjavur
(D) Tirunelveli
(E) Answer not known

84. Based on the following assertion and reason, choose the correct answer:
Assertion (A): The district of Thanjavur is traditionally known as the "Rice Bowl" of Tamil Nadu.
Reason (R): It is located in the fertile Cauvery delta region which provides excellent geographical conditions for widespread paddy cultivation.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

85. Identify the correct statement regarding the new districts formed by 2022.
(A) Chengalpattu was bifurcated from Chennai.
(B) Mayiladuthurai was formed out of Nagapattinam district in the Delta zone.
(C) Tenkasi was carved out of Kanyakumari district.
(D) Kallakurichi is a coastal district bifurcated from Cuddalore.
(E) Answer not known

86. Match the items in List I with those in List II:
List I: (Hill Stations)
P. Kodaikanal

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(E) Answer not known

120. Read the following statements regarding the Southern Tamil Nadu zone:
I. Madurai is known as the temple city and cultural capital.
II. Thoothukudi serves as an important port and thermal energy hub.
III. Tenkasi acts as a gateway to Kerala and is known for Courtallam falls.
IV. Ramanathapuram is completely landlocked with no coastal geography.
V. Tirunelveli relies on the Tamirabarani river for agriculture.
Which of the above statements is/are correct?
(A) I, II, III and V
(B) II, III, IV and V
(C) I, III, IV and V
(D) I, II, IV and V
(E) Answer not known

121. When comparing the industrial geography of Salem and Tiruppur, which statement is accurate?
(A) Salem is renowned for its steel production, whereas Tiruppur leads in the global textile and knitwear trade.
(B) Both districts rely primarily on coastal shipping for their raw materials.
(C) Salem is dominated by IT corridors, while Tiruppur is known for leather tanning.
(D) Tiruppur has major thermal power plants, whereas Salem relies on nuclear energy.
(E) Answer not known

122. Read the following statements regarding the administrative structure:
I. There are 38 districts in Tamil Nadu as of 2022.
II. A district is divided into revenue divisions, which are further divided into taluks.
III. The reorganization of districts was strictly based on religious demographics.
Which of the above statements is/are correct?
(A) I and III
(B) I and II
(C) II and III
(D) II only
(E) Answer not known

123. Which of the following is the least relevant geographical feature of the Delta zone of Tamil Nadu?
(A) Flat, fertile alluvial plains
(B) Distributaries of the Bureau river
(C) Extensive paddy fields
(D) High altitude montane forests
(E) Answer not known

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124. Based on the following assertion and reason, choose the correct answer:
Assertion (A): The district of Chengalpattu has witnessed significant demographic and economic expansion.
Reason (R): Its proximity to Chennai has facilitated the growth of IT corridors, industries, and heritage tourism at Mamallapuram.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

125. What can be inferred about the geographical distribution of Tamil Nadu's industrial hubs?
(A) They are concentrated entirely in the fertile Delta region.
(B) Hubs are decentralized across north, west, and south.
(C) They are exclusively limited to the coastal-facing districts.
(D) They are solely dependent on hill stations for raw materials.
(E) Answer not known

126. Match the items in List I with those in List II:
List I: (Smart Cities)
P. Chennai
Q. Coimbatore
R. Madurai
S. Thanjavur
List II: (Regional Identities)
I. Cultural and temple capital
II. Delta region's heritage and agricultural center
III. Capital city and IT/manufacturing hub
IV. Western textile and industrial hub
(A) P-IV, Q-III, R-II, S-I
(B) P-I, Q-II, R-III, S-IV

95. Which of the following is the most appropriate reason for Chengalpattu's rapid economic growth?
(A) It maintains a complete reliance on deep-sea fishing sectors.
(B) Proximity to Chennai with IT corridors and Mamallapuram tourism.
(C) It is the sole producer of refined steel in the whole state.
(D) High altitude climate favorable for large-scale tea plantations.
(E) Answer not known

96. Arrange the following zones of Tamil Nadu based on their general geographical position from North to South:
I. Southern Zone
II. Northern Zone
III. Central Zone
(A) II, III, I
(B) I, II, III
(C) III, II, I
(D) II, I, III
(E) Answer not known

97. Which of the following pairs is incorrectly matched regarding rivers and the districts they flow through?
(A) Vaigai - Salem
(B) Palar - Vellore
(C) Noyyal - Coimbatore
(D) Tamirabarani - Tirunelveli
(E) Answer not known

98. Match the items in List I with those in List II:
List I: (Newly Created Districts)
P. Tenkasi
Q. Kallakurichi
R. Tirupathur
S. Chengalpattu
List II: (Parent Districts)
I. Villupuram
II. Vellore
III. Kanchipuram
IV. Tirunelveli
(A) P-I, Q-IV, R-III, S-II
(B) P-III, Q-II, R-I, S-IV
(C) P-IV, Q-I, R-II, S-III
(D) P-II, Q-III, R-IV, S-I
(E) Answer not known

99. The geographical concept of a "Delta Zone" in Tamil Nadu is best exemplified by the districts of:
(A) Thanjavur, Tiruvarur, and Mayiladuthurai
(B) Theni and Dindigul
(C) Vellore and Ranipet
(D) Coimbatore and Erode
(E) Answer not known

100. Read the following statements regarding the geography of Coimbatore:
I. It is situated near the Western Ghats and the Nilgiris.
II. It is a major hub for the textile industry.
III. It lies on the banks of the Noyyal river.
IV. It is designated as one of the Smart Cities of Tamil Nadu.
V. It is famous as the primary port city of the Western Zone.
Which of the above statements is/are correct?
(A) I, II, III and IV
(B) II, III, IV and V
(C) I, III, IV and V
(D) I, II, IV and V
(E) Answer not known

101. Which district is geographically characterized by the presence of the Shevaroy Hills and large-scale coffee cultivation?
(A) Nilgiris
(B) Salem
(C) Dindigul
(D) Kanyakumari
(E) Answer not known

102. Read the following statements regarding the historical background of Tamil Nadu's state formation:
I. It was formed after the linguistic reorganisation of states in 1956.
II. Its boundaries were carved out from the former Madras Presidency.
III. It acquired its current boundaries immediately upon independence in 1947 without any subsequent changes.
Which of the above statements is/are correct?
(A) I and II
(B) II and III
(C) I and III
(D) I only
(E) Answer not known

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Q. Yercaud
R. Ooty
S. Kolli Hills

List II: (Hill Ranges)
I. Shevaroy Hills
II. Palani Hills
III. Namakkal district ranges
IV. Nilgiris

(A) P-I, Q-II, R-III, S-IV
(B) P-IV, Q-III, R-II, S-I
(C) P-II, Q-I, R-IV, S-III
(D) P-II, Q-IV, R-I, S-III
(E) Answer not known

87. An entrepreneur looking to set up a massive printing and fireworks unit would find the arid geography and skilled labor of which region most advantageous?
(A) The Nilgiris
(B) Thanjavur
(C) Nagapattinam
(D) Sivakasi
(E) Answer not known

88. Select the correct sequential arrangement of Tamil Nadu's administrative levels from grassroots to the highest district level.
(A) Village, Taluk, Revenue Division, District
(B) Village, Revenue Division, Taluk, District
(C) Taluk, Village, Revenue Division, District
(D) District, Revenue Division, Taluk, Village
(E) Answer not known

89. Which of the following statements about Tirunelveli district is incorrect?
(A) It is fed by the Tamirabarani river.
(B) It is the northernmost district of Tamil Nadu.
(C) It is renowned for widespread banana cultivation.
(D) It holds rich heritage and historical significance.
(E) Answer not known

90. Read the following statements regarding the Southern Tamil Nadu zone:
I. Madurai serves as its cultural capital.
II. Thoothukudi features major thermal power plants.
III. Virudhunagar is known for its arid geography and fireworks industry.
IV. Theni is largely an industrial district with no agriculture or horticulture.

Which of the above statements is/are incorrect?
(A) I and II
(B) IV only
(C) III and IV
(D) II, III and IV
(E) Answer not known

91. The Doddabetta peak is a prominent geographical feature of which hill station?
(A) Ooty
(B) Kodaikanal
(C) Yercaud
(D) Yelagiri
(E) Answer not known

92. Which of the following pairs is correctly matched regarding Central Tamil Nadu districts?
(A) Tiruchirappalli - SIPCOT industrial area
(B) Nagapattinam - Geographical centrality
(C) Thanjavur - Brihadeeswarar Temple
(D) Cuddalore - Tsunami impact
(E) Answer not known

93. The application of Special Economic Zones (SEZs) in Tamil Nadu is primarily aimed at:
(A) Restricting foreign direct investment in core economic areas.
(B) Converting agricultural lands into urban real estate ventures.
(C) Centralizing all state administrative functions within Chennai.
(D) Leveraging local geography to develop region-specific industries.
(E) Answer not known

94. Based on the following assertion and reason, choose the correct answer:
Assertion (A): The Nilgiri Mountain Railway operates on a rack and pinion system.
Reason (R): This engineering design is necessary to negotiate the steep gradients of the mountainous geography of the Nilgiris.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

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111. The presence of the Rock Fort is a defining landmark of which Central zone district?
(A) Thanjavur
(B) Tiruchirappalli
(C) Madurai
(D) Salem
(E) Answer not known

112. Which of the following pairs is correctly matched regarding the Western Zone districts?
(A) Namakkal - Steel production
(B) Erode - Poultry capital
(C) Coimbatore - Turmeric capital
(D) Tiruppur - Knitwear capital
(E) Answer not known

113. Which district's geography is most accurately described as arid and heavily dependent on ground water, shaping its dominance in the fireworks and printing industry?
(A) Kanyakumari coastal region
(B) Nilgiris high altitude zone
(C) Virudhunagar's arid plains
(D) Thanjavur's alluvial delta
(E) Answer not known

114. Based on the following assertion and reason, choose the correct answer:
Assertion (A): The agricultural output of the Cauvery Delta districts relies extensively on the Mettur Dam.
Reason (R): The Mettur Dam, located in Salem district, regulates the flow of the Cauvery river, ensuring timely irrigation for paddy cultivation in the delta.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

115. Identify the most appropriate reason why Kanyakumari is a major tourism hub in Southern Tamil Nadu.
(A) It hosts the largest information technology parks in the entire state.
(B) It contains the highest mountain peak and unique alpine vegetation.
(C) It features the longest continuous freshwater lake found in India.
(D) It is the confluence of three oceans at the tip of India.
(E) Answer not known

116. Arrange the following hill stations of Tamil Nadu by their elevation from lowest to highest:
I. Yelagiri
II. Yercaud
III. Ooty
(A) I, II, III
(B) II, I, III
(C) III, II, I
(D) I, III, II
(E) Answer not known

117. Which of the following pairs is incorrectly matched regarding major temples and their locations?
(A) Meenakshi Temple - Madurai
(B) Brihadeeswarar Temple - Thanjavur
(C) Nataraja Temple - Rameswaram
(D) Shore Temple - Mamallapuram
(E) Answer not known

118. Match the items in List I with those in List II:
List I: (Features)
P. Botanical Garden and Doddabetta
Q. Courtallam Falls
R. Arunachala Hill
S. Sirumalai Hills
List II: (Districts)
I. Tiruvannamalai
II. Dindigul
III. Tenkasi
IV. Nilgiris
(A) P-III, Q-IV, R-II, S-I
(B) P-IV, Q-I, R-III, S-II
(C) P-I, Q-II, R-III, S-IV
(D) P-IV, Q-III, R-I, S-II
(E) Answer not known

119. A prominent category of industrial development in Tamil Nadu is the Special Economic Zone (SEZ). Which of the following is an example of an SEZ-focused sector in the Chengalpattu district?
(A) Heavy Engineering
(B) Information Technology
(C) Knitwear and Textiles
(D) Petrochemicals

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explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

135. Which district acts as a crucial link and transport hub in Western Tamil Nadu while also holding the title of poultry capital?
(A) Salem
(B) Namakkal
(C) Erode
(D) Tiruppur
(E) Answer not known

136. Arrange the following landmark heritage sites from North to South in Tamil Nadu:
I. Mamallapuram
II. Rock Fort (Tiruchirappalli)
III. Brihadeeswarar Temple (Thanjavur)
IV. Meenakshi Temple (Madurai)
(A) I, II, III, IV
(B) II, I, IV, III
(C) I, III, II, IV
(D) IV, III, II, I
(E) Answer not known

137. Which of the following pairs is incorrectly matched regarding Special Economic Zones (SEZs) and industrial corridors?
(A) Nilgiris - Heavy Steel SEZ corridor
(B) Chennai-Bengaluru - Industrial Corridor
(C) Chennai-Kanyakumari - Industrial Corridor
(D) Chengalpattu - IT SEZ corridor
(E) Answer not known

138. Match the items in List I with those in List II:
List I: (Dams/Rivers)
P. Mettur Dam
Q. Periyar River Origin
R. Tamirabarani River
S. Palar River
List II: (Geographical Significance/District)
I. Theni district
II. Tirunelveli district
III. Vellore and Ranipet basin
IV. Salem district proximity
(A) P-III, Q-II, R-IV, S-I
(B) P-I, Q-IV, R-II, S-III
(C) P-IV, Q-I, R-II, S-III
(D) P-II, Q-III, R-I, S-IV
(E) Answer not known

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139. A regional planner categorizing agricultural zones would classify Villupuram and Kallakurichi primarily as:
(A) A major tea and coffee plantation highland zone.
(B) An exclusive coastal marine fishing zone.
(C) An arid, water-scarce millet-growing region.
(D) Part of the northern sugarcane belt.
(E) Answer not known

140. Read the following statements regarding the geography of Tamil Nadu's hill stations:
I. Ooty is situated in the Nilgiris and features the Doddabetta peak.
II. Kodaikanal is located in the Palani Hills and hosts a solar observatory.
III. Yercaud is located in the Shevaroy Hills in Salem district.
IV. Kolli Hills and Yelagiri are recognized as hill stations in Tamil Nadu.
V. The Nilgiri Mountain Railway connects Mettupalayam to Ooty.
Which of the above statements is/are correct?
(A) I, II, III and IV
(B) I, II, IV and V
(C) II, III, IV and V
(D) I, III, IV and V
(E) Answer not known

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(C) P-III, Q-I, R-IV, S-II
(D) P-III, Q-IV, R-I, S-II
(E) Answer not known

127. Which of the following highlights a major environmental disadvantage associated with the industrial corridor developments in Tamil Nadu?
(A) Pollution of river basins, such as the Palar and Noyyal, due to industrial effluents
(B) Enhanced road connectivity between rural areas
(C) Increase in agricultural subsidies for farmers
(D) Restoration of coastal mangroves
(E) Answer not known

128. Select the correct sequence of districts one would traverse when moving eastward from Coimbatore to Nagapattinam along the pearl-rich Cauvery basin:
(A) Coimbatore, Tiruchirappalli, Thanjavur, Nagapattinam
(B) Nagapattinam, Thanjavur, Tiruchirappalli, Coimbatore
(C) Coimbatore, Thanjavur, Tiruchirappalli, Nagapattinam
(D) Tiruchirappalli, Coimbatore, Nagapattinam, Thanjavur
(E) Answer not known

129. Identify the factual statement regarding the new districts formed in Tamil Nadu by 2022.
(A) They aim to improve administrative efficiency in large areas.
(B) They reduced the total number of districts to 32.
(C) Mayiladuthurai was carved out of the western district of Erode.
(D) They eliminated the need for Revenue Divisions entirely.
(E) Answer not known

130. Read the following statements regarding the geography of temples and heritage sites:
I. Rameswaram is located in the coastal geography of Ramanathapuram.
II. Mamallapuram showcases Pallava architecture on the coast of Chengalpattu.
III. Brihadeeswarar Temple is a structural marvel in the Thanjavur delta.
IV. Chidambaram is situated in the Nilgiris district.
Which of the above statements is/are incorrect?
(A) I and II
(B) III only
(C) IV only
(D) I, II and III
(E) Answer not known

131. Which feature defines the geographical importance of the Sirumalai Hills?
(A) They host the largest hydroelectric dam project in Tamil Nadu.
(B) They are an isolated forest range in the Dindigul district.
(C) They are the primary source of the northern Palar river system.
(D) They represent the southernmost tip of the Eastern Ghats in Kanyakumari.
(E) Answer not known

132. Which of the following pairs is correctly matched regarding Central Tamil Nadu?
(A) Cuddalore - Leather industry
(B) Nagapattinam - Hill station tourism
(C) Tiruchirappalli - Rock Fort and geographical centrality
(D) Thanjavur - Fireworks capital
(E) Answer not known

133. Which of the following statements about the Tiruvannamalai district is NOT correct?
(A) It falls under the Northern Tamil Nadu zone.
(B) It holds significant religious importance due to the Arunachala Hill.
(C) It is an inland district with distinct geography.
(D) It is a coastal district with major seaports.
(E) Answer not known

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134. Based on the following assertion and reason, choose the correct answer:
Assertion (A): Sivakasi has developed into the fireworks and printing capital of India.
Reason (R): The region experiences severe water scarcity and dry climatic conditions, which are highly favorable for these specific industries.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct

III. SEZs in Chengalpattu are primarily focused on Information Technology.
IV. Tamil Nadu has no SEZs in the southern zones.
Which of the above statements is/are correct?
(A) I, II and III
(B) II, III and IV
(C) I and IV
(D) I, III and IV
(E) Answer not known

71. Identify the unique geographical feature of the Nilgiris district among the options below.
(A) It possesses the longest continuous coastline in the state.
(B) It is identified as a prominent deltaic agricultural region.
(C) It is characterized by extensive arid desert ecosystems.
(D) It forms the junction of the Eastern and Western Ghats.
(E) Answer not known

72. Which of the following pairs is correctly matched regarding the Western Tamil Nadu zone?
(A) Namakkal - Transport Hub
(B) Coimbatore - Steel City
(C) Salem - Textile Hub
(D) Erode - Knitwear Capital
(E) Answer not known

73. If an industry relies heavily on coastal geography for shipping and the processing of beach sand minerals, it would most appropriately be located in:
(A) Tiruvannamalai
(B) Thoothukudi
(C) Dindigul
(D) Kallakurichi
(E) Answer not known

74. Based on the following assertion and reason, choose the correct answer:
Assertion (A): The Noyyal river in the Western zone has faced severe ecological degradation.
Reason (R): Intensive turmeric cultivation along its banks has absorbed all its water, leaving it dry.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.
(E) Answer not known

75. What is the most likely inference regarding the establishment of Smart Cities in places like Coimbatore, Madurai, and Tiruppur?
(A) They are urban hubs requiring upgraded infrastructure.
(B) These cities are being depopulated to protect sensitive heritage sites.
(C) They are purely agricultural districts with no significant urban population.
(D) They are the only cities in Tamil Nadu located exclusively on river banks.
(E) Answer not known

76. Arrange the following newly created districts according to their geographical zones from North to South:
I. Ranipet
II. Kallakurichi
III. Mayiladuthurai
IV. Tenkasi
(A) I, II, III, IV
(B) II, I, IV, III
(C) I, III, II, IV
(D) III, II, I, IV
(E) Answer not known

77. Which of the following pairs is incorrectly matched regarding specific regional industries?
(A) Tirunelveli - Banana cultivation
(B) Dindigul - Locks and knives
(C) Vellore - Leather tanning
(D) Sivakasi - Tea and coffee processing
(E) Answer not known

78. Match the items in List I with those in List II:
List I: (Temples)
P. Rock Fort Temple
Q. Arunachaleswarar Temple
R. Brihadeeswarar Temple
S. Shore Temple
List II: (Significance)
I. Chola architecture in the Delta zone
II. Pallava coastal heritage
III. Geographically central, situated on a massive rock
IV. Prominent hill temple in Tiruvannamalai

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ANSWERS

1. (A) Erode
During the administrative reorganisation of Tamil Nadu in recent years, several new districts were carved out from larger existing ones to enhance governance and administrative reach. While Ranipet, Kallakurichi, and Tenkasi were among the newly established administrative units, Erode is a long-standing district that was not part of this specific 2022 reorganisation phase.

2. (A) I and II
Mayiladuthurai was established as a new district within the fertile Cauvery delta region to improve local administration. Similarly, Chengalpattu was created due to its significant urban growth and proximity to Chennai's industrial and IT corridors. However, Tirupathur was formed by bifurcating the Vellore district, not the Salem district, making the third statement regarding its origin factually incorrect.

3. (A) It acts as the intermediary unit between the district and taluks for revenue matters.
In the hierarchical administrative structure of Tamil Nadu, a Revenue Division serves as a vital middle layer managed by a Revenue Divisional Officer. This unit bridges the gap between the district administration and the smaller taluks. Its primary role involves supervising land records, revenue collection, and ensuring the efficient implementation of various government schemes at the local level.

4. (A) Both A and R are true and R is the correct explanation of A.
Vellore and Ranipet are globally recognized as major centers for the leather industry, hosting numerous tanneries and processing units. This concentration is largely due to the geographical advantage provided by the Palar river basin. The river system historically offered the consistent water supply essential for the chemical tanning and intensive processing required to produce high-quality leather goods.

5. (B) It includes sugarcane belts like Villupuram and Kallakurichi.
The Northern Tamil Nadu zone is characterized by its diverse agricultural and industrial landscape. Districts like Villupuram and Kallakurichi are prominent parts of this zone, known specifically for their extensive sugarcane cultivation and presence of sugar mills. This region differs significantly from the deltaic rice-producing areas or the mountainous zones bordering Kerala, defining its specific economic identity.

6. (C) P-III, Q-IV, R-I, S-II
Tiruchirappalli is defined by its geographical centrality and the iconic Rock Fort temple. Thanjavur represents the heart of the Cauvery delta, famous for the Brihadeeswarar Temple. Nagapattinam is a coastal district known for its fishing economy and historical tsunami impact. Cuddalore features the SIPCOT industrial complex and is characterized by its location along the Uppanar river system.

(D) A fertile Cauvery distributary tract including Thanjavur and Tiruvarur.
The Delta zone of Tamil Nadu is geographically defined by the extensive network of distributaries formed by the Cauvery river. This region, which includes Thanjavur and Tiruvarur, features flat, fertile alluvial plains that are highly suitable for intensive agriculture. It is widely regarded as the primary rice-producing belt of the state due to these favorable natural conditions.

8. (A) Coimbatore, Tiruppur, Erode
The Noyyal river follows a specific westward to eastward path through the industrial heartland of Tamil Nadu. It originates in the Velliangiri Hills and flows through the Coimbatore district, continues into the Tiruppur district, and finally traverses Erode before merging with the Cauvery. This sequence is vital for the region's agricultural and industrial water management systems.

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southernmost tip of the Indian subcontinent. It is the specific point where three major water bodies—the Arabian Sea, the Bay of Bengal, and the Indian Ocean—meet. This confluence makes it a significant landmark for both geographical study and international tourism, offering a rare view of diverse marine ecosystems.

64. (A) Both A and R are true and R is the correct explanation of A.
The leather industry is highly concentrated in Vellore and Ranipet because the process of tanning requires vast amounts of water. These districts are located within the Palar river basin, which historically provided the necessary water resources to support the establishment of numerous tanneries. This natural geographical advantage led to the region becoming a global hub for high-quality leather production and exports.

65. (A) Decentralizing districts to improve administrative efficiency.
The creation of new districts like Mayiladuthurai and Kallakurichi is driven by the need to decentralize administration. As populations grow and regions expand, smaller administrative units allow the government to be more accessible to citizens and manage resources more effectively. This reorganisation focuses on improving public service delivery, law and order, and local development without altering the fundamental state structure.

66. (C) P-II, Q-III, R-I, S-IV
Mamallapuram is celebrated for its Pallava coastal rock-cut architecture, while Ooty is home to the Nilgiri Mountain Railway, a UNESCO heritage site. Thanjavur is the location of the magnificent Brihadeeswarar Temple. Chidambaram is famous for the Nataraja Temple, located in close proximity to various regional heritage sites. These designations highlight the rich cultural and historical significance embedded in Tamil Nadu's geography.

67. (A) Chengalpattu
Chengalpattu district benefits significantly from its strategic location adjacent to Chennai. It hosts major Information Technology corridors and industrial parks while also containing the historical heritage site of Mamallapuram. This unique combination of modern industrial growth and international tourism makes it an economically vibrant district. Its geography allows it to serve as both an urban extension and a cultural landmark for the state.

68. (A) Tiruchirappalli, Thanjavur, Nagapattinam
The Cauvery river flows through a specific sequence of districts as it moves towards the coast. It first enters the Central zone at Tiruchirappalli, where it begins to branch out. It then flows through the heart of the fertile Thanjavur district, providing water for extensive agriculture. Finally, the river's various distributaries reach the eastern coast through districts like Nagapattinam and Mayiladuthurai.

69. (B) It is known globally as the turmeric capital.
Erode district is internationally recognized for its massive production and trade of turmeric, earning it the prestigious title of the turmeric capital. The district's economy is deeply rooted in this agricultural product, supported by its fertile lands and irrigation from the Bhavani and Cauvery rivers. It is a major commercial hub for spices and textiles rather than fruit production or marine fishing.

70. (A) I, II and III
Special Economic Zones (SEZs) are established to drive exports and industrial development by providing tax incentives and better infrastructure. Tiruppur utilizes SEZs for its booming textile and knitwear sectors, while Chengalpattu focuses on IT and manufacturing. However, the claim that there are no SEZs in southern zones is incorrect, as several southern districts also host specialized industrial zones to boost local economies.

71. (D) It forms the junction of the Eastern and Western Ghats.
The Nilgiris district is geographically unique as the meeting point of the Eastern and Western Ghats. This junction creates a distinct montane ecosystem characterized by high-altitude plateaus, deep valleys, and rich biodiversity. Unlike the low-lying coastal or deltaic regions, its terrain is predominantly mountainous, which influences its climate, tribal culture, and the dominance of tea and coffee plantations in its economy.

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The Nataraja Temple is famously located in Chidambaram, representing a major pilgrimage site. Finally, the Ramanathaswamy Temple is situated in Rameswaram, an island town. These locations are central to the religious and architectural heritage of their respective districts.

19. (A) Pallava rock-cut architecture
Mamallapuram is a renowned UNESCO World Heritage site that serves as a primary example of Pallava dynasty craftsmanship. The site features extraordinary rock-cut temples, monoliths, and bas-reliefs carved directly into granite outcrops along the coast. This architectural style preceded the later structural temple developments of the Chola and Pandya periods, marking a significant era in South Indian temple building.

20. (A) I, II, IV and V
Industrial corridors like Chennai-Bengaluru and Chennai-Kanyakumari are designed to integrate northern and southern districts into a cohesive economic network. SEZs for Information Technology are concentrated in the Chengalpattu-Chennai belt, while Coimbatore and Tiruppur host specialized zones for textiles. However, the claim that SEZs are only in the Delta zone is incorrect, as they are distributed across various industrial hubs.

21. (B) Nilgiris has high altitude biodiversity; Kanyakumari has three water bodies.
The Nilgiris district is defined by its high-altitude mountainous terrain, which supports unique montane biodiversity and extensive tea plantations. In contrast, Kanyakumari district is geographically unique for being the confluence point where the Arabian Sea, the Bay of Bengal, and the Indian Ocean meet. This distinction highlights the varied topography of Tamil Nadu, ranging from highlands to coastal tips.

22. (B) I and II
Ooty is a premier hill station in the Nilgiris district, housing the prominent Doddabetta peak, the highest point in the range. It is also famous for the Nilgiri Mountain Railway, which is a recognized UNESCO World Heritage site for its engineering and historical value. However, Ooty is located in the Western Ghats, not on the eastern coastline of the state.

23. (D) Large-scale beach sand mineral extraction
Tiruvannamalai is an inland district in Northern Tamil Nadu, centered around the spiritually significant Arunachala Hill and the famous temple complex. It is a major pilgrimage center with a landscape defined by rocky hills and agriculture. Unlike coastal districts such as Thoothukudi, it does not possess a coastline, making large-scale beach sand mineral extraction geographically impossible and irrelevant for this region.

24. (A) Both A and R are true and R is the correct explanation of A.
The Noyyal river in Tiruppur has suffered significant environmental degradation over the past few decades. This ecological crisis is directly linked to the rapid growth of the local textile and knitwear industry. Numerous dyeing and processing units frequently discharge untreated chemical effluents into the river, leading to severe water pollution and affecting the surrounding agricultural lands and groundwater quality.

25. (B) It shapes the city as its historical and cultural capital.
The Vaigai river has played a fundamental role in the development of Madurai, which is often called the cultural capital of Tamil Nadu. The city's history, traditions, and urban layout are deeply intertwined with the river's presence. Rather than being a major shipping route or a massive delta, the Vaigai is the lifeblood that has sustained Madurai's civilization for millennia.

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26. (B) P-III, Q-II, R-IV, S-I
Sivakasi is the national center for fireworks and printing, while Salem is distinguished by its major steel manufacturing plants. Tiruppur serves as the knitwear capital of India, driving significant export revenue. Erode is recognized as a primary hub for turmeric trade and textile weaving. Each city represents a specialized industrial sector that contributes to the economic diversity of the state.

27. (A) It boosts connectivity and industrial growth in southern regions.
The Chennai-Kanyakumari Industrial Corridor is a strategic project aimed at enhancing infrastructure and transport links along the eastern coast to the southern tip. By improving connectivity, it facilitates the movement of

by the Nilgiri Mountain Railway, making those statements incorrect.

81. (A) A sub-division of a revenue division managing several villages.
A Taluk is a critical administrative unit within the structure of Tamil Nadu's government. It serves as a subdivision of a Revenue Division and is responsible for managing a specific cluster of villages. Led by a Tahsildar, the taluk office handles land administration, revenue collection, and the implementation of local social welfare programs, acting as the primary point of contact for rural citizens.

82. (C) I and III
The Northern zone of Tamil Nadu is geographically defined by the Palar river basin, which supports its industrial and agricultural base. The Delta zone is formed by the fertile distributaries of the Cauvery river, making it a major agricultural hub. However, the Central zone is primarily associated with the Cauvery, while the Vaigai river is the defining feature of the Southern zone, specifically Madurai.

83. (A) Madurai
Madurai is widely regarded as the cultural capital of Tamil Nadu due to its ancient history and the presence of the Meenakshi Amman Temple. Geographically, the city is situated on the banks of the Vaigai river, which has influenced its urban development and cultural traditions for centuries. It remains one of the oldest continuously inhabited cities in the world and a major center for southern heritage.

84. (A) Both A and R are true and R is the correct explanation of A.
Thanjavur is traditionally called the "Rice Bowl" of Tamil Nadu because it produces a significant portion of the state's paddy. This high productivity is directly attributed to its location in the heart of the fertile Cauvery delta. The nutrient-rich alluvial soil and the extensive irrigation network provided by the river's distributaries create the perfect geographical environment for successful and widespread rice cultivation.

85. (B) Mayiladuthurai was formed out of Nagapattinam district in the Delta zone.
Among the newly created districts, Mayiladuthurai was established by bifurcating the Nagapattinam district to improve administration in the Cauvery delta region. Chengalpattu was bifurcated from Kanchipuram, and Tenkasi was carved out from Tirunelveli. Kallakurichi is an inland district bifurcated from Villupuram. Identifying Mayiladuthurai's origin in the Delta zone correctly reflects the 2022 reorganisation of Tamil Nadu's administrative boundaries.

86. (C) P-II, Q-I, R-IV, S-III
Kodaikanal is located in the Palani Hills, while Yercaud is situated in the Shevaroy Hills of the Salem district. Ooty is the primary hill station of the Nilgiris range. The Kolli Hills are found within the Namakkal district. Each of these hill stations belongs to a specific mountain range and district, contributing to the varied highland geography and tourism potential of the state.

87. (D) Sivakasi
Sivakasi is the ideal location for printing and fireworks units due to its specific environmental and economic factors. The region's arid geography and low rainfall are essential for the safe handling and storage of combustible materials. Furthermore, the area has developed a large pool of skilled labor specialized in these trades over many decades, making it the national leader in these two industrial sectors.

88. (A) Village, Taluk, Revenue Division, District
The administrative structure of Tamil Nadu is organized hierarchically to ensure governance from the grassroots to the state level. The village is the smallest and most fundamental unit of administration. Several villages form a Taluk, which is then grouped into a Revenue Division. Multiple Revenue Divisions collectively constitute a District, which is the largest administrative unit under a District Collector's jurisdiction.

89. (B) It is the northernmost district of Tamil Nadu.
Tirunelveli district is a major southern district fed by the perennial Tamirabarani river. It is well-known for its rich heritage and extensive banana cultivation, which is a key part of its agricultural economy. However, it is located in the far south of the state, not the north. The northernmost

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the geographical progression from the northern coastal plains to the southern coastal regions.

37. (B) Thanjavur - Western Zone
Smart Cities are designated based on their urban importance across various geographical zones. Chennai is in the Northern Zone, Coimbatore is in the Western Zone, and Madurai is in the Southern Zone. Thanjavur is a designated Smart City, but it is located in the Delta Zone, not the Western Zone, making this specific pairing geographically incorrect in the context of state regionalization.

38. (C) P-II, Q-I, R-IV, S-III
Each geographical zone in Tamil Nadu includes specific districts with distinct characteristics. The Northern Zone includes Vellore, which is known for its industrial and historical significance. The Central Zone features Tiruchirappalli, a major hub of administration and trade. The Western Zone includes Namakkal, a center for transport and poultry. The Southern Zone includes Virudhunagar, recognized for its arid climate and industrial clusters.

39. (D) Textile, knitwear, and power looms
The Western Tamil Nadu zone, comprising districts like Coimbatore, Tiruppur, and Erode, is the industrial powerhouse of the state's textile sector. This region is dominated by a vast network of spinning mills, knitwear manufacturing units, and power looms. These industries form the backbone of the local economy and contribute significantly to India's total textile exports, defining the zone's primary industrial classification.

40. (A) I, II, III and IV
By 2022, Tamil Nadu's administrative map expanded to 38 districts to facilitate better governance. In this hierarchy, Revenue Divisions connect districts and taluks, while villages remain the basic units of administration. Newly created districts like Kallakurichi and Ranipet were part of this reorganisation. However, taluks are smaller than Revenue Divisions, making the fifth statement regarding their size factually incorrect.

41. (B) It was reorganised primarily based on linguistic boundaries from the former Madras Presidency.
The formation of modern Tamil Nadu is rooted in the linguistic reorganisation of Indian states in 1956. Following independence, the former Madras Presidency was divided to create states based on the primary languages spoken by the population. This process established the current boundaries of Tamil Nadu as a state for Tamil-speaking people, distinguishing it from neighboring Telugu, Malayalam, and Kannada-speaking regions.

42. (D) I, II and III
The Brihadeeswarar Temple is a masterpiece of Chola architecture located in the fertile Thanjavur delta. The Meenakshi Temple serves as the heart of Madurai, situated on the banks of the Vaigai river. The Ramanathaswamy Temple is famously located on Rameswaram island within the Ramanathapuram district. All three statements accurately describe the geographical and river-based locations of these major heritage sites.

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43. (A) They are Dindigul hills with unique flora and geography.
The Sirumalai Hills are a range of hills located in the Dindigul district of Tamil Nadu. They are known for their cool climate and diverse flora, including a specific variety of hill banana. Unlike the Nilgiris, which are dominated by tea estates, or the Palani Hills, which host a solar observatory, the Sirumalai Hills represent an isolated but ecologically significant forest range.

44. (A) Both A and R are true and R is the correct explanation of A.
The Nilgiri Mountain Railway is a UNESCO World Heritage site, recognized for its unique historical and technical value. It was constructed using a specialized rack and pinion system to safely navigate the extremely steep and difficult terrain of the Western Ghats. This engineering achievement preserves the operational heritage of steam-powered travel through mountainous landscapes, making it a globally significant landmark.

45. (D) It is a hill station located in the Shevaroy Hills of Salem district, known for coffee cultivation.
Yercaud is a prominent hill station situated in the Shevaroy Hills within the Salem district. Often referred to as the "Jewel of the South," it is characterized by its cool climate, coffee plantations, and spice gardens. Unlike the higher peaks of the Nilgiris or the coastal heritage sites, its geography is defined by its position in the Eastern Ghats and its agricultural focus.

46. (C) P-II, Q-I, R-IV, S-III
The Palar river basin is a defining feature of the Vellore region, supporting its local industries. The Cauvery river flows through Tiruchirappalli, where it splits into various distributaries. The Noyyal river is central to the industrial landscape of Tiruppur. The Vaigai river flows through the heart of Madurai, shaping its cultural identity. Each river system is vital to its respective district.

47. (B) It acts as a connecting hub between north, south, east, and west regions.
Tiruchirappalli district is characterized by its central location within the state of Tamil Nadu. This geographical position makes it a vital transportation and logistics hub, effectively connecting the northern, southern, eastern, and western parts of the state. Its centrality has historically made it a major center for administration, commerce, and pilgrimage, serving as a gateway to various regional zones.

48. (A) Chengalpattu, Villupuram, Tirunelveli, Kanyakumari
When traveling from Chennai to the southern tip of India at Kanyakumari, a traveler follows a specific latitudinal sequence through several major districts. Starting from the north near Chennai, one passes through Chengalpattu and Villupuram in the northern and central-coastal plains. Continuing further south, the route enters the Tirunelveli region before finally reaching the destination at Kanyakumari.

49. (A) It is built across the Vaigai river.
The Mettur Dam is one of the most significant engineering structures in Tamil Nadu, but it is built across the Cauvery river, not the Vaigai. Located near Salem, it serves as a crucial reservoir for irrigating the extensive paddy fields in the Cauvery delta. It also plays a vital role in generating hydroelectric power, contributing to the state's energy and agricultural stability.

50. (D) I, II, III and IV
In the recent administrative reorganisation, several new districts were created to streamline governance. Tenkasi was carved out from Tirunelveli, while Kallakurichi was bifurcated from Villupuram. Similarly, Tirupathur was separated from Vellore, and Chengalpattu was formed from the larger Kanchipuram district. These changes were aimed at improving local administration and public service delivery across these expanding regions of the state.

51. (A) Agricultural significance and fertile alluvial geography
Describing the Cauvery Delta as the "rice bowl" of Tamil Nadu is a classification based on its unique physical geography and economic output. The region's fertile alluvial soil, deposited over centuries by the river's distributaries, provides ideal conditions for large-scale paddy cultivation. This terminology highlights how natural landforms and water availability directly dictate the primary agricultural identity and productivity of a region.

52. (D) Thanjavur - Delta Zone
Thanjavur is a designated Smart City that serves as a central hub for the fertile Delta Zone, reflecting its agricultural and heritage importance. Other cities like Vellore are in the Northern Zone, Tiruppur is in the Western Zone, and Madurai is in the Southern Zone. Correctly identifying Thanjavur with the Delta Zone aligns its urban status with its specific geographical and economic region.

53. (B) Vulnerability to tsunamis and coastal cyclones
Nagapattinam is a coastal district located in the low-lying Cauvery delta, making it highly susceptible to maritime natural disasters. Its history is marked by the devastating impact of the 2004 tsunami and frequent tropical cyclones from the Bay of Bengal. These environmental challenges significantly influence the region's fishing economy, disaster management strategies, and the overall socio-economic planning of its coastal communities.

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54. (A) Both A and R are true and R is the correct explanation of A.
The Nilgiris district is a unique biodiversity hotspot in India, featuring high-altitude ecosystems that support rare flora and fauna. These climatic conditions, characterized by cool temperatures and high rainfall, are ideal for large-scale plantation crops like tea. Additionally, the district is home to significant tribal populations whose lives are closely integrated with the mountain landscape and the established plantation economy.

55. (D) Locks and knives manufacturing
Dindigul district holds a unique position in the industrial landscape of Tamil Nadu due to its historical specialization in specific metalwork. The region is widely recognized for the production of high-quality iron locks and knives, which have gained significant commercial importance. This traditional craftsmanship continues to be a hallmark of the local economy alongside other sectors like agriculture and leather processing.

56. (I, II, III)
Following the flow of the Cauvery river system toward its delta, the major water management structures are encountered in a specific sequence. The Bhavanisagar Dam is located on a tributary in the west. Moving downstream, the Mettur Dam regulates the main river's flow. Finally, the Grand Anicut, or Kallanai, is situated near the delta to distribute water into various irrigation channels.

57. (B) Arunachala Hill - Tiruchirappalli district
Doddabetta is correctly located in the Nilgiris, Courtallam falls in Tenkasi, and the Palani Hills are associated with Kodaikanal. However, the Arunachala Hill is the central feature of the Tiruvannamalai district, not Tiruchirappalli. Tiruchirappalli is instead known for its Rock Fort temple. This mismatch highlights the distinct landmarks associated with different spiritual and geographical centers across the state.

58. (B) P-II, Q-III, R-IV, S-I
Namakkal is recognized as the poultry capital of Tamil Nadu due to its large-scale egg production. Tiruppur serves as the knitwear capital, dominating the nation's garment export industry. Sivakasi is the primary center for printing and fireworks, while Erode is internationally famous as the turmeric capital. Each title reflects the specific economic dominance and industrial specialization of these diverse regional hubs.

59. (A) It is geographically located in Andhra Pradesh, near the border.
While Horsley Hills is a popular hill station often visited by people from Tamil Nadu, it is administratively and geographically located within the state of Andhra Pradesh. Its proximity to the border makes it a frequent destination for regional tourism, but it does not fall under the administrative jurisdiction of Tamil Nadu, unlike hill stations like Ooty, Kodaikanal, or Yercaud.

60. (A) I and V
The Cauvery river originates in Karnataka and flows into Tamil Nadu, shaping the geography and economy of the Central and Delta zones. It is a lifeline for agriculture in Thanjavur and is central to the landscape of Tiruchirappalli. The statements claiming it originates in Tamil Nadu or that it completely bypasses the Western zone are factually incorrect river geography.

61. (D) Northern zone has Palar and IT; Delta zone has Cauvery and rice.
The Northern Tamil Nadu zone and the Delta zone are distinguished by their primary river systems and economic activities. The north is characterized by the Palar river basin and a heavy concentration of Information Technology and manufacturing sectors. In contrast, the Delta zone is defined by the fertile distributaries of the Cauvery river and its overwhelming focus on intensive paddy cultivation.

62. (A) I and II
Villupuram and Kallakurichi districts are situated in the Northern part of Tamil Nadu and constitute a major sugarcane-producing belt. Kallakurichi was recently established as a separate district through the bifurcation of Villupuram to improve administrative efficiency. However, these districts are not part of the Southern Tamil Nadu zone, which includes districts like Madurai, Tirunelveli, and Kanyakumari.

63. (B) Kanyakumari
Kanyakumari district is world-renowned for its unique geographical location at the

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goods and encourages the establishment of new industries in southern districts. This development helps in balancing regional economic growth and providing better employment opportunities outside the northern hubs.

28. (C) District, Revenue Division, Taluk, Village
The administrative hierarchy in Tamil Nadu is organized to ensure efficient governance from the state level down to the local level. The district is the largest primary unit, which is subdivided into Revenue Divisions. Each Revenue Division is further split into several taluks, which are the main operational units. Finally, the village remains the fundamental and smallest unit of administration.

29. (D) Tirunelveli
The Tamirabarani river is a perennial river that serves as the primary water source for the Tirunelveli district. Its consistent flow supports a robust agricultural economy, particularly the widespread cultivation of bananas, for which the region is well-known. The river's geographical path and irrigation network are central to the livelihoods and historical development of the people in this southern district.

30. (C) IV only
Mayiladuthurai was indeed part of the recent administrative reorganisation, created by bifurcating the Nagapattinam district in the pearl-rich Cauvery delta. It holds immense agricultural significance due to its fertile soil and river access. The claim that it was formed by bifurcating the Nilgiris is factually incorrect, as the Nilgiris is a western highland district far from the delta region.

31. (B) Theni
Theni district is uniquely positioned in the Southern zone, bordering the Western Ghats and serving as the origin point for the Periyar river. Its fertile valleys and favorable climate make it a major center for horticulture, producing a variety of fruits and spices. Its proximity to several hill stations further enhances its geographical and economic importance within the state's southern landscape.

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32. (D) Thoothukudi - Port city and thermal plant
Thoothukudi is a prominent coastal district characterized by its major seaport and significant thermal power generation capacity. Cuddalore is associated with the SIPCOT industrial area and the Uppanar river, while Nagapattinam is noted for its fishing economy and tsunami history. Identifying Thoothukudi as a port city with thermal plants correctly matches its primary geographical and industrial features in the state.

33. (C) Bhavani
The Central Tamil Nadu zone is primarily defined by the Cauvery river and its local distributaries, including the Uppanar in coastal areas. These rivers are essential for the region's agricultural and industrial activities. The Bhavani river, however, is a major tributary of the Cauvery that flows predominantly through the Western zone, particularly Erode, and is not a defining feature of the central region.

34. (C) A is true but R is false.
Ramanathapuram is indeed a strategic coastal district with a large coastline and a significant economy based on marine fisheries. However, the reasoning provided is false because it is not an inland district, nor is its economy driven by freshwater lakes and aquaculture. Its geographical identity is defined by its proximity to the sea and its role in maritime trade and fishing.

35. (A) It features a solar observatory and is located in the Palani Hills.
Kodaikanal is a famous hill station situated in the Palani Hills of the Dindigul district. It is home to the Kodaikanal Solar Observatory, one of the oldest such institutions in the country. Known as the "Princess of Hill Stations," its high altitude and unique climate distinguish it from other regions, and it is not associated with the Salem district or mountain railways.

36. (A) I, II, III, IV
Along the eastern coast of Tamil Nadu, districts are situated in a clear north-to-south sequence. Chengalpattu is located just south of Chennai. Continuing down the coast, one encounters Cuddalore, followed by Nagapattinam in the delta region. Ramanathapuram is located further south along the coast. This arrangement reflects

72. (A) Namakkal - Transport Hub
Namakkal is correctly identified as a major transport hub due to its massive trucking industry and logistics infrastructure. Coimbatore is more accurately described as a textile and industrial hub rather than a steel city, while Salem is the primary center for steel. Tiruppur is the knitwear capital, and Erode is the turmeric capital. Identifying Namakkal with transport highlights its specific contribution to the Western zone.

73. (B) Thoothukudi
Thoothukudi is the most appropriate location for industries requiring coastal access for shipping and mineral processing. Its status as a major port city facilitates the export of industrial goods and the import of raw materials. Furthermore, its coastal geography is rich in beach sand minerals, which are extracted and processed locally, making it a critical industrial hub compared to landlocked districts like Tiruvannamalai or Dindigul.

74. (C) A is true but R is false.
The Noyyal river in the Western zone has indeed faced severe ecological degradation and pollution. However, the cause is not turmeric cultivation, but rather the intensive discharge of untreated chemical effluents from the textile dyeing and processing industries in the Tiruppur region. While agriculture exists, industrial waste is the primary factor behind the river's environmental crisis, making the provided reason factually incorrect.

75. (A) They are urban hubs requiring upgraded infrastructure.
The designation of Coimbatore, Madurai, and Tiruppur as Smart Cities indicates their status as major urban and economic centers. These cities have large populations and significant industrial or cultural importance, necessitating modern infrastructure, improved public services, and technological integration. The mission aims to enhance the quality of life in these already established hubs rather than depopulating them or focusing solely on their agricultural backgrounds.

76. (I, II, III, IV)
The newly created districts are located in a clear north-to-south geographical sequence. Ranipet is in the northernmost part near the Palar basin. Kallakurichi is located in the central-northern sugarcane belt. Mayiladuthurai is situated in the central-coastal delta region. Tenkasi, being a gateway to Kerala in the south, is the southernmost among this specific group of newly formed administrative districts.

77. (D) Sivakasi - Tea and coffee processing
Regional industrial specializations in Tamil Nadu are well-defined. Tirunelveli is known for bananas, Dindigul for locks, and Vellore for leather tanning. However, Sivakasi is famous for its fireworks, matches, and printing industries, not for tea and coffee. Tea and coffee processing are primary industries in the high-altitude districts like the Nilgiris and Salem, making the Sivakasi pairing factually incorrect.

78. (C) P-III, Q-IV, R-I, S-II
The Rock Fort Temple is a unique structure built on a massive rock in geographically central Tiruchirappalli. The Arunachaleswarar Temple is a major landmark at the base of the Arunachala Hill in Tiruvannamalai. The Brihadeeswarar Temple is a pinnacle of Chola architecture in the Thanjavur delta. The Shore Temple represents the ancient Pallava coastal heritage in Mamallapuram. Each temple defines its region's historical identity.

79. (B) Cuddalore
The SIPCOT industrial complex in Cuddalore is a major economic zone situated along the banks of the Uppanar river. This area hosts a variety of chemical, pharmaceutical, and manufacturing industries that utilize the river and coastal geography for their operations. This industrial presence is a defining feature of Cuddalore's economy, distinguishing it from the purely agricultural or heritage-focused identities of neighboring coastal districts.

80. (A) I, II and III
Namakkal is a key transport and poultry hub, while the Chennai-Bengaluru corridor drives growth in northern districts. Tenkasi serves as a gateway to Kerala via the Western Ghats. However, Ramanathapuram does not host a large thermal plant using Neyveli lignite; that is characteristic of the Cuddalore region. Additionally, the Nilgiris district is connected

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9. (B) Kallakurichi
The Smart Cities Mission in Tamil Nadu identifies major urban centers for technological and infrastructural upgrades. Cities like Coimbatore, Madurai, and Vellore have been officially designated as Smart Cities to enhance their urban governance and citizen services. In contrast, Kallakurichi, being a recently formed district with a more rural focus, is not included in this specific urban development list.

10. (D) IV only
Coimbatore and Tiruppur are global leaders in textiles and knitwear, while Erode is famous for turmeric and the Bhavani river. Salem is indeed known as the steel city due to its major production units. However, the claim that it lacks major dams is incorrect, as the Mettur Dam, a crucial reservoir, is located in close proximity to Salem.

11. (A) It is a major transport hub and the poultry capital of Tamil Nadu.
Namakkal district is strategically located in the Western zone, serving as a critical logistics and transport hub with a massive fleet of trucks. Additionally, it is internationally renowned for its highly developed poultry industry, earning it the title of the poultry capital. Unlike coastal districts, its economy is driven by these terrestrial commercial activities and inland geographical features.

12. (C) Theni - Periyar river origin and horticulture
Theni district is distinguished by its unique location near the Western Ghats, where the Periyar river originates. It is a major center for horticulture, producing various fruits and vegetables. In contrast, Dindigul is known for locks, Virudhunagar for fireworks, and Ramanathapuram is a coastal district, making the pairing of Theni with its river and agricultural focus factually accurate.

13. (D) Dry, arid climate facilitates fireworks and printing industries.
The industrial specialization of Sivakasi is deeply influenced by its specific environmental conditions. The region's dry and arid climate provides a safe and effective environment for the manufacturing and storage of fireworks and safety matches. Additionally, this low-humidity atmosphere is ideal for the large-scale printing industry, which has become a cornerstone of the local economy over several decades.

14. (A) Both A and R are true and R is the correct explanation of A.
Thoothukudi serves as a vital economic pillar in Southern Tamil Nadu due to its strategic port facilities and industrial capacity. The city hosts significant thermal power plants that contribute to the state's energy grid. Furthermore, its coastal geography enables the processing and export of beach sand minerals, reinforcing the direct link between its geographical location and industrial hub status.

15. (B) A gateway to Kerala famous for the Courtallam falls.
Tenkasi district is geographically positioned along the Western Ghats, serving as a natural corridor or gateway between Tamil Nadu and Kerala. It is widely celebrated for the Courtallam falls, which attract numerous tourists and are central to its regional identity. This district was recently created to improve administration in this ecologically rich and agriculturally significant southern highland area.

16. (A) I, II, IV, III
Moving from the northern part of Tamil Nadu toward the south, the major hill stations are encountered in a specific latitudinal order. Yelagiri is situated in the north in the Tirupathur region. Continuing southward, one reaches Yercaud in Salem, followed by Ooty in the Nilgiris. Kodaikanal, located in the Palani Hills of the Dindigul district, is the southernmost.

17. (A) Kolli Hills - Kanyakumari district
Hill stations in Tamil Nadu are located within specific ranges of the Eastern and Western Ghats. Ooty is the heart of the Nilgiris, Kodaikanal is in the Palani Hills, and Yercaud is in the Shevaroy Hills of Salem. However, the Kolli Hills are located in the Namakkal district, not Kanyakumari, making that particular pairing geographically incorrect and mismatched.

18. (C) P-II, Q-IV, R-I, S-III
The Meenakshi Amman Temple is the cultural center of Madurai, while the Brihadeeswarar Temple is the architectural pride of Thanjavur.

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districts of Tamil Nadu include Chennai, Tiruvallur, and Ranipet, making that statement incorrect.

90. (B) IV only
Madurai, Thoothukudi, and Virudhunagar each have well-defined cultural and industrial roles in the Southern zone. However, the statement about Theni is incorrect because it is not solely an industrial district. Theni is actually a major agricultural hub, particularly famous for its horticulture and fertile valleys. It produces a wide variety of fruits and vegetables, making the claim that it lacks agriculture factually wrong.

91. (A) Ooty
Doddabetta peak is the highest point in the Nilgiri Mountains and a major geographical landmark of the Ooty hill station. Situated at an elevation of over 2,600 meters, it offers a panoramic view of the surrounding hills and valleys. It is a central feature of the Nilgiris district's topography and a primary attraction for tourists visiting this high-altitude region of the Western Ghats.

92. (C) Thanjavur - Brihadeeswarar Temple
Thanjavur is correctly matched with the Brihadeeswarar Temple, which is its most significant architectural and cultural landmark. Tiruchirappalli is defined by its geographical centrality and the Rock Fort, while Cuddalore is noted for its SIPCOT industrial area and Uppanar river. Nagapattinam is a coastal district known for its fishing economy. These correct pairings highlight the defining economic and cultural characteristics of each central district.

93. (D) Leveraging local geography to develop region-specific industries.
Special Economic Zones in Tamil Nadu are strategically placed to take advantage of regional strengths. For example, SEZs near Chennai and Chengalpattu leverage urban infrastructure for IT, while those in Tiruppur and Coimbatore use local expertise for textiles. The primary goal is to use the specific geography and existing industrial clusters of different regions to promote exports and attract investment into specialized sectors.

94. (A) Both A and R are true and R is the correct explanation of A.
The Nilgiri Mountain Railway utilizes a specialized rack and pinion system, which is essential for navigating the extremely steep gradients of the hills. This engineering design allows the train to climb high altitudes that conventional rail systems cannot handle. It is a defining feature of this historic railway, which is why it was recognized as a UNESCO World Heritage site for its unique technical achievement.

95. (B) Proximity to Chennai with IT corridors and Mamallapuram tourism.
Chengalpattu has experienced rapid economic expansion primarily due to its strategic location bordering the state capital, Chennai. This proximity has led to the development of massive Information Technology corridors and various industrial parks. Additionally, the district hosts the UNESCO site of Mamallapuram, which drives significant tourism revenue. This combination of modern industry and historical tourism creates a diverse and growing economic base for the region.

96. (A) II, III, I
Following the geography of Tamil Nadu from north to south, the zones appear in a specific order. The Northern Zone, including districts like Chennai and Vellore, is at the top. Moving southward, one enters the Central and Delta zones, which include Tiruchirappalli and Thanjavur. Finally, the Southern Zone, comprising districts like Madurai, Tirunelveli, and Kanyakumari, occupies the southernmost part of the state's territory.

97. (A) Vaigai - Salem
The geographical distribution of rivers in Tamil Nadu follows distinct paths through specific districts. While the Palar flows through Vellore and the Noyyal through Coimbatore, the Vaigai river is primarily associated with the southern districts like Madurai and Theni. Salem is situated in a different geographical zone and is not traversed by the Vaigai river system, which flows towards the southeastern coast.

98. (C) P-IV, Q-I, R-II, S-III
The creation of new districts involved the bifurcation of several large parent districts.

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altitude hill station located at about 1,100 meters. Yercaud, situated in the Shevaroy Hills, is higher, reaching elevations around 1,500 meters. Ooty, in the Nilgiris, is one of the highest peaks, with elevations exceeding 2,200 meters. This sequence correctly reflects their progression from lower to higher elevations.

117. (C) Nataraja Temple - Rameswaram
Major temples in Tamil Nadu are located in specific cities that are central to their religious and architectural history. The Meenakshi Temple is in Madurai, and the Brihadeeswarar Temple is in Thanjavur. The Shore Temple is a landmark of Mamallapuram. However, the Nataraja Temple is located in Chidambaram, not Rameswaram. Rameswaram is instead the site of the Ramanathaswamy Temple, making that pairing factually incorrect.

118. (D) P-IV, Q-III, R-I, S-II
The Botanical Garden and Doddabetta peak are central features of the Nilgiris district. Courtallam Falls is the primary attraction of the Tenkasi district. The Arunachala Hill is the spiritual and geographical heart of Tiruvannamalai. The Sirumalai Hills are an ecologically unique range located in the Dindigul district. Each feature is a defining landmark that characterizes the natural beauty and regional identity of its respective district.

119. (B) Information Technology
Chengalpattu district has emerged as a major hub for the Information Technology sector within Tamil Nadu. Numerous Special Economic Zones have been established along the Old Mahabalipuram Road and other corridors to promote software exports and industrial growth. This focus on IT, combined with manufacturing and tourism, defines the district's modern economic landscape and its role as a key contributor to the state's technological advancement.

120. (A) I, II, III and V
Madurai, Thoothukudi, Tenkasi, and Tirunelveli are all key components of the Southern Tamil Nadu zone, each with distinct cultural, industrial, or agricultural roles. However, the statement that Ramanathapuram is landlocked is incorrect. Ramanathapuram is a prominent coastal district with one of the longest coastlines in the state, making its geographical description as landlocked factually wrong in the context of the state's geography.

121. (A) Salem is renowned for its steel production, whereas Tiruppur leads in the global textile and knitwear trade.
Salem and Tiruppur are two major industrial hubs in the Western zone, but they specialize in entirely different sectors. Salem is famous for its large-scale steel manufacturing and mineral resources. In contrast, Tiruppur is a global center for the textile and knitwear industry, contributing a significant portion of India's garment exports. This distinction highlights the diverse industrial capabilities that drive the economic growth of the western region.

122. (B) I and II
As of 2022, Tamil Nadu is administratively divided into 38 districts to ensure better governance. Each district is further subdivided into Revenue Divisions and then into taluks. This hierarchical structure facilitates efficient public administration. However, the reorganisation of districts is based on administrative convenience and population growth, not on religious demographics, making the third statement regarding the basis of reorganisation factually incorrect.

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123. (D) High altitude montane forests
The Delta zone of Tamil Nadu is characterized by its low-lying, flat alluvial plains and extensive network of river distributaries. This geography is ideal for paddy cultivation and intensive agriculture. High-altitude montane forests are features of mountainous regions like the Nilgiris or the Western Ghats and are entirely absent from the deltaic landscape, making them the least relevant feature for this specific geographical zone.

124. (A) Both A and R are true and R is the correct explanation of A.
Chengalpattu has seen significant economic and demographic growth recently, which is directly linked to its proximity to Chennai. This location has fostered the expansion of Information Technology corridors, automobile industries, and residential developments. Furthermore,

the severe pollution of the Noyyal river caused by the discharge of untreated chemical effluents from numerous dyeing and bleaching units. This has not only damaged the river's ecosystem but has also contaminated groundwater and reduced the agricultural productivity of the surrounding lands.

108. (A) Palar, Cauvery, Vaigai, Tamirabarani
Moving from the northern part of Tamil Nadu to the southern tip, the major river systems are encountered in a clear latitudinal sequence. The Palar river flows through the northern districts. The Cauvery, with its vast delta, dominates the central part of the state. The Vaigai river is central to the southern district of Madurai, while the Tamirabarani is the southernmost perennial river in Tirunelveli.

109. (D) It was formed in 2022 and lies in the sugarcane belt.
Kallakurichi is one of the newly created districts in Tamil Nadu, established through the reorganisation of administrative boundaries in recent years. It is an inland district located in the northern part of the state and is recognized as a major sugarcane-producing area. It is not a coastal district or a high-altitude hill station, but rather an agriculturally significant region within the northern sugarcane belt.

110. (D) I, II, III and IV
Tamil Nadu's coastal districts have distinct geographical and economic features. Nagapattinam is noted for its vulnerability to tsunamis and its fishing industry. Thoothukudi is a major port city with beach sand minerals. Ramanathapuram holds strategic importance in fisheries, and Kanyakumari is unique as the meeting point of three oceans. All these statements accurately describe the varied characteristics and importance of the state's coastal geography.

111. (B) Tiruchirappalli
The Rock Fort is an iconic historical and religious landmark situated on a massive, ancient rock that rises abruptly from the plains. It is the defining feature of Tiruchirappalli, a central district in Tamil Nadu. The temple complex at the top offers a panoramic view of the city and the Cauvery river, symbolizing the geographical and cultural centrality of this important administrative and commercial hub.

112. (D) Tiruppur - Knitwear capital
Tiruppur is accurately described as the knitwear capital of India, as it dominates the national export market for cotton garments. Other western districts have different specializations: Namakkal is the poultry capital, Erode is the turmeric capital, and Salem is the steel city. Identifying Tiruppur with knitwear correctly highlights its unique and globally significant industrial role within the Western Tamil Nadu economic zone.

113. (C) Virudhunagar's arid plains
Virudhunagar district is geographically characterized by its dry and arid plains, which receive relatively low rainfall. This environmental condition, combined with limited surface water, led to the development of industries that do not require intensive water use, such as fireworks and printing. Sivakasi, located within this district, has leveraged these geographical features to become the national leader in these specialized industrial sectors.

114. (A) Both A and R are true and R is the correct explanation of A.
The agricultural success of the Cauvery Delta is heavily dependent on the water released from the Mettur Dam. Located in the Salem district, this dam acts as the primary reservoir for the Cauvery river in Tamil Nadu. By regulating the water flow, it ensures that the delta districts receive timely and sufficient irrigation for their extensive paddy crops, making it essential for the region's food security.

115. (D) It is the confluence of three oceans at the tip of India.
Kanyakumari's primary attraction as a tourism hub is its unique geographical position at the tip of the Indian subcontinent. It is the only place in India where the Arabian Sea, the Bay of Bengal, and the Indian Ocean meet. This rare confluence, along with the spectacular views of sunrises and sunsets over the water, makes it a significant destination for travelers from around the world.

116. (A) I, II, III
Hill stations in Tamil Nadu vary significantly in their elevation above sea level. Yelagiri is a lower-

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its primary role as a major hub for transport and administration in central Tamil Nadu.

133. (D) It is a coastal district with major seaports.
Tiruvannamalai is an inland district situated in the northern part of Tamil Nadu, known for its spiritual significance and the Arunachala Hill. It does not have any coastal boundaries or seaports. Its economy is based on agriculture and pilgrimage-related tourism rather than maritime trade. Therefore, describing it as a coastal district with seaports is factually incorrect and does not align with its actual inland geography.

134. (A) Both A and R are true and R is the correct explanation of A.
Sivakasi has become a national hub for fireworks and printing because its local climate is uniquely suited for these industries. The region experiences dry, arid conditions with very low rainfall for most of the year. This environment is ideal for the safe production and drying of fireworks and for the operation of high-quality printing presses, demonstrating how geographical factors can directly shape a region's industrial specialization.

135. (B) Namakkal
Namakkal district is a critical economic center in Western Tamil Nadu, serving as a major hub for the logistics and transportation industry. Its strategic location on key highway routes has made it a center for trucking operations. Furthermore, it is widely recognized as the poultry capital of the state due to its massive egg production. These dual roles define its geographical and commercial importance within the region.

136. (A) I, II, III, IV
Traveling from north to south through Tamil Nadu, major heritage sites appear in a specific latitudinal order. Mamallapuram, near Chennai, is the northernmost. Moving south, one reaches the Rock Fort in Tiruchirappalli, followed by the Brihadeeswarar Temple in Thanjavur within the delta. The Meenakshi Temple in Madurai is the southernmost in this group, reflecting the historical and architectural progression across different dynasties and regions of the state.

137. (A) Nilgiris - Heavy Steel SEZ corridor
While industrial corridors like Chennai-Bengaluru and Chennai-Kanyakumari are key to the state's economy, and Chengalpattu is an IT hub, the Nilgiris is not a center for heavy steel production. The Nilgiris is a protected mountainous district focused on tea plantations, tourism, and biodiversity. Steel production is primarily concentrated in Salem, making the pairing of Nilgiris with a heavy steel SEZ factually incorrect and geographically mismatched.

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138. (C) P-IV, Q-I, R-II, S-III
The Mettur Dam is located in close proximity to Salem district and regulates the Cauvery river. The Periyar river has its origins in the mountainous terrain of the Theni district. The Tamirabarani river is the lifeblood of the Tirunelveli district in the south. The Palar river basin is the defining geographical feature of the Vellore and Ranipet regions, supporting their local industrial and agricultural activities.

139. (D) Part of the northern sugarcane belt.
Villupuram and Kallakurichi districts are key parts of the agricultural landscape in northern Tamil Nadu. This region is geographically and economically characterized as a major sugarcane-producing belt. The presence of numerous sugar mills and extensive cultivation of this crop distinguishes it from the coastal fishing zones or the high-altitude plantation areas. It serves as a vital contributor to the state's sugar industry and northern agricultural economy.

140. (A) I, II, III and IV
Tamil Nadu's hill stations are diverse, with Ooty in the Nilgiris and Kodaikanal in the Palani Hills being the most famous. Yercaud is another key station located in the Shevaroy Hills of Salem. Other ranges like the Kolli Hills and Yelagiri are also recognized for their unique high-altitude geography. These stations are essential to the state's tourism and support various plantation crops, defining the highland features of the state.

the district's inclusion of the UNESCO World Heritage site at Mamallapuram ensures its status as a major tourism hub, illustrating how geographical location can drive multi-sectoral regional development.

125. (B) Hubs are decentralized across north, west, and south.
Industrial development in Tamil Nadu is not confined to a single region but is decentralized across several geographical zones. The north is a hub for IT and automobiles, the west dominates in textiles and poultry, and the south is significant for fireworks, ports, and power generation. This decentralized strategy ensures that economic growth and employment opportunities are distributed throughout the state, leveraging the unique strengths of each region.

126. (D) P-III, Q-IV, R-I, S-II
Chennai is the state capital and a major hub for IT and manufacturing. Coimbatore is the primary industrial and textile center of the Western zone. Madurai serves as the cultural and temple capital of the south. Thanjavur is the heart of the delta region, known for its agricultural heritage. These regional identities define the urban focus of the Smart Cities designated across different parts of Tamil Nadu.

127. (A) Pollution of river basins, such as the Palar and Noyyal, due to industrial effluents
While industrial corridors bring economic growth, they also present significant environmental challenges. The heavy concentration of industries often leads to the pollution of nearby river basins, such as the Palar in the north and the Noyyal in the west. The discharge of untreated chemical waste into these water bodies contaminates groundwater and damages the ecosystems, representing a major disadvantage of rapid and unregulated industrial expansion in these zones.

128. (A) Coimbatore, Tiruchirappalli, Thanjavur, Nagapattinam
Moving eastward from the industrial west toward the coast, one follows the general path of the Cauvery river system. Starting from Coimbatore, the journey leads to Tiruchirappalli, the gateway to the delta. Continuing east, one passes through the heart of the fertile Thanjavur district. Finally, the route ends at the coastal district of Nagapattinam, illustrating the geographical transition from the western highlands to the eastern deltaic plains.

129. (A) They aim to improve administrative efficiency in large areas.
The primary goal of creating new districts in Tamil Nadu is to improve administrative efficiency. By dividing large, populous districts into smaller units, the government can ensure better monitoring of development projects, maintain law and order more effectively, and provide easier access to public services for the local population. This administrative reorganisation is a response to regional growth and the need for more localized governance.

130. (C) IV only
Rameswaram, Mamallapuram, and the Brihadeeswarar Temple are correctly associated with their coastal or deltaic locations. However, the statement that Chidambaram is in the Nilgiris district is incorrect. Chidambaram is a coastal town located in the Cuddalore district, far from the western mountainous terrain of the Nilgiris. This highlights the distinct geographical distribution of major religious and heritage sites across the state of Tamil Nadu.

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131. (B) They are an isolated forest range in the Dindigul district.
The Sirumalai Hills are a distinct range of hills located within the Dindigul district. They are noted for their cool climate and diverse biological species, including a specific variety of hill banana. Unlike the continuous ranges of the Western Ghats, the Sirumalai Hills form a relatively isolated forest ecosystem. They contribute to the district's natural beauty and serve as an important local ecological and horticultural resource.

132. (C) Tiruchirappalli - Rock Fort and geographical centrality
Tiruchirappalli is the most appropriate match for geographical centrality and the Rock Fort temple. Thanjavur is best known for its deltaic agriculture and Chola temples, while Nagapattinam and Cuddalore have coastal identities defined by fishing and industrial zones respectively. Identifying Tiruchirappalli with its central location and iconic fort correctly reflects

Tenkasi was carved out from Tirunelveli in the south. Kallakurichi was formed from Villupuram in the north-central region. Tirupathur was created by splitting the Vellore district. Chengalpattu was established by bifurcating Kanchipuram near Chennai. These changes were part of a state-wide effort to improve administrative reach and governance efficiency.

99. (A) Thanjavur, Tiruvarur, and Mayiladuthurai
The "Delta Zone" is a distinct geographical region in Tamil Nadu formed by the numerous distributaries of the Cauvery river. The districts of Thanjavur, Tiruvarur, and Mayiladuthurai are the core components of this zone. They are characterized by fertile alluvial plains and intensive paddy cultivation. This area differs from the mountainous western zones or the industrial northern zones, representing the state's agricultural heartland.

100. (A) I, II, III and IV
Coimbatore is a premier industrial city in the Western zone, located near the Western Ghats and the Noyyal river. It is a major hub for textiles and manufacturing and is designated as an official Smart City. However, the claim that it is a primary port city is incorrect, as Coimbatore is an inland city located far from the coastline, with no maritime port facilities.

101. (B) Salem
Salem district is geographically characterized by the presence of the Shevaroy Hills, which form part of the Eastern Ghats. These hills provide the necessary high-altitude climate for large-scale coffee cultivation and spice gardens. While the Nilgiris is also famous for tea and coffee, the Shevaroy range is specifically located within Salem, defining its local topography and contributing to the district's agricultural diversity.

102. (A) I and II
Tamil Nadu was formed as a linguistic state in 1956 following the reorganisation of Indian states based on language. Its territory was carved out from the vast Madras Presidency of the colonial era. However, the statement that its boundaries remained unchanged since 1947 is incorrect, as several administrative reorganisations and district bifurcations have occurred over the decades to shape the state's current internal map.

103. (D) Nilgiris district
The Nilgiris district is one of the most prominent biodiversity hotspots in Tamil Nadu, situated at the junction of the Eastern and Western Ghats. It features unique montane flora and fauna and is home to several ancient tribal communities whose cultures are deeply linked to the forest landscape. This mountainous region offers a stark contrast to the coastal plains and deltaic agricultural regions of the state.

104. (B) Both A and R are true but R is not the correct explanation of A.
Erode is indeed a major center for textile weaving and power looms, and the Bhavani river provides vital water for the region's agricultural and industrial activities. However, the presence of the river is not the primary or sole reason for the district's emergence as a textile weaving hub, which is also driven by historical trade routes, labor availability, and entrepreneurship in the region.

105. (B) It leverages Northern district proximity to IT and ports.
The Chennai-Bengaluru industrial corridor is a strategic economic initiative designed to boost growth in the northern districts of Tamil Nadu. By leveraging the proximity to Chennai's major seaports and the established Information Technology hubs, the corridor attracts manufacturing and technology investments. This infrastructure project aims to create a highly connected industrial belt that enhances trade and employment opportunities between these two major regional economic centers.

106. (B) P-IV, Q-II, R-I, S-III
Tirunelveli is noted for its banana cultivation, while Erode is the global capital for turmeric. Villupuram is a significant part of the sugarcane belt in northern Tamil Nadu. The Nilgiris is world-famous for its high-quality tea plantations. Each district has a specific agricultural identity that is closely linked to its local climate, soil conditions, and historical farming practices within the state.

107. (A) Pollution of the Noyyal river due to untreated effluents from dyeing units.
The rapid and intensive industrialization of the textile sector in Tiruppur has led to significant environmental challenges. The primary issue is

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